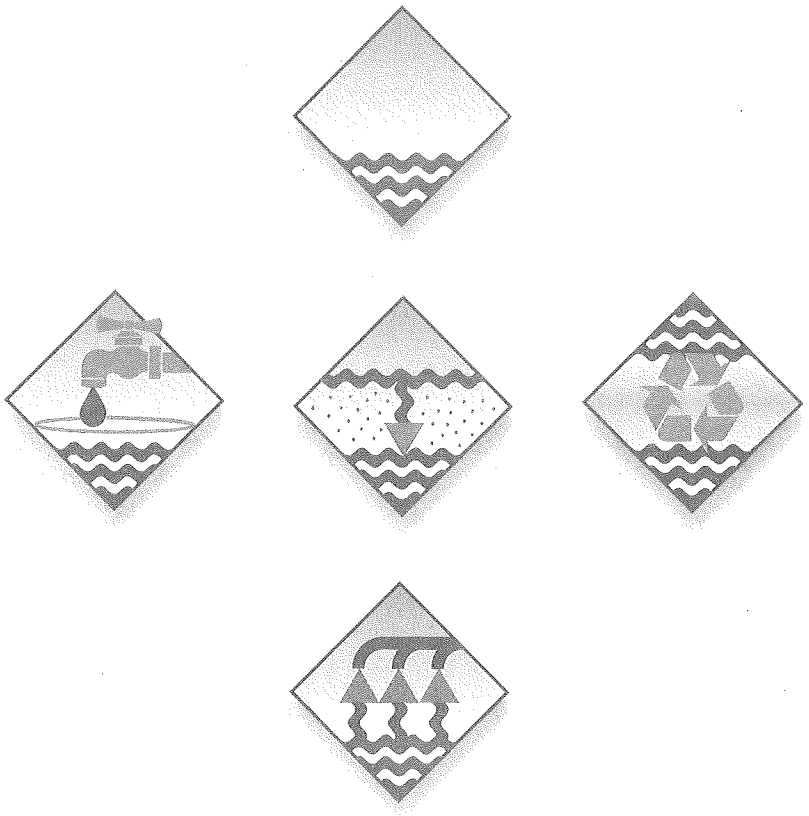
IWRP

Integrated Water Resources Plan

Implementation Plan

June 1999



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Santa Clara Valley Water District

Integrated Water Resources Plan

Implementation Plan

Prepared by the IWRP Project Team under the Direction of

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June 1999

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IWRP Implementation Plan Project Staff

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Introduction

This document is the Implementation Plan for the Santa Clara Valley Water District (District) Integrated Water Resources Plan (IWRP). It describes and documents the current status of the IWRP Preferred Strategy, key issues and potential barriers to the implementation of this strategy, and the activities necessary for successful implementation.

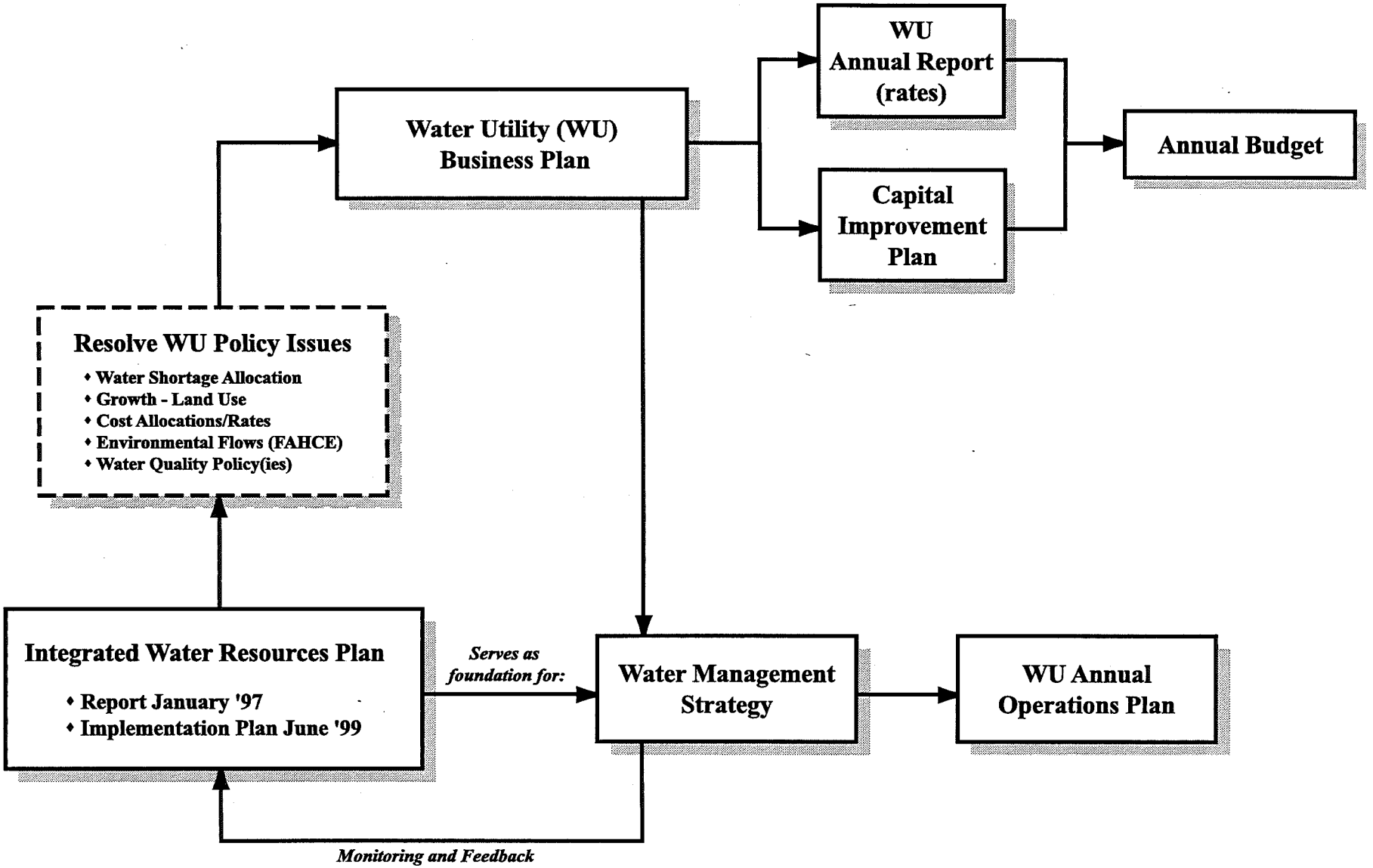
The IWRP Preferred Strategy is a flexible, long-term, overall water supply plan for Santa Clara County through the year 2020. In the Board's review of the proposed Fiscal Year 1999-2000 budget, they reaffirmed the importance of flexibility in the IWRP. The strategy includes "*core elements,*" which consist of existing water supplies and baseline activities designed to increase water supply reliability. Four "*key components*"—water banking, recycled water, water conservation, and long-term water transfers—serve as the cornerstones of the strategy and are the focus of this document.

The IWRP Preferred Strategy was adopted by the Santa Clara Valley Water District Board of Directors (Board) in December 1996 after a comprehensive stakeholder participation process and was published in a report and appendices in January 1997. The preferred strategy included a number of baseline and modeling assumptions that were documented in the IWRP report and its Appendix.

Since the preferred strategy was adopted, several important accomplishments and new developments have occurred at the District which are outside the scope of this report. Important details related to year-to-year water management decision-making will be addressed in a Water Management Strategy (see Figure 1-1). Other important business aspects of the District's Water Utility are being addressed in a new Business Plan. Finally, the Water Utility will undertake a comprehensive performance audit in fiscal year 1999-2000 that will likely yield recommendations that may affect the IWRP Preferred Strategy and its implementation.

Given these important changes, a comprehensive review and update of the IWRP Preferred Strategy will be undertaken within the next few years. Until that point, this Implementation Plan provides the road map for IWRP-related actions.

Figure I-1
Water Utility Plans, Policies and Processes



Chapter 1: Background and Overview of the IWRP

IWRP Planning Phase

In 1994 the Board identified water supply reliability as the top priority issue for the District. The Board also identified an integrated water resources planning approach as the preferred method to develop a long-term, overall water supply plan. Integrated resources planning approaches an issue broadly and inclusively, often incorporating flexibility to respond to changing conditions and opportunity for community input.

Throughout 1995 the Board held work/study sessions to develop planning objectives for the District's IWRP. During the IWRP process, several water resource strategies were designed and rated against these planning objectives, with the goal of developing a preferred strategy. To accomplish this work, the District's IWRP project team met throughout 1996 with community "stakeholders," who played an active role in shaping the IWRP process and also helped ensure that the IWRP reflected community priorities. In December of 1996, the Board accepted the project team's preferred strategy, as well as conclusions and recommendations for further action.

Addressing Critical Dry Period Forecasts

The IWRP Preferred Strategy addresses the following forecast: By the year 2020, Santa Clara County could experience a water supply shortage of 100,000 acre feet (af) based on current supplies, projected growth and likely dry periods.

The preferred strategy is a flexible plan designed to meet a critical dry period shortage level of up to 100,000 af. It is designed for optimum flexibility to meet changing conditions and demands over time through staged review, development and implementation of four key components: water banking, recycled water, water conservation*, and long-term water transfers.

* *Please note: "Water conservation" is referred to in the IWRP Final Report as "demand management" (DSM). However, in order to maintain consistency with the CALFED Program, the term "water conservation" will be used in this document.*

IWRP Planning Objectives

In 1995 the Board agreed upon a series of 13 initial planning objectives and corresponding criteria. In 1996, external stakeholders reviewed and refined these objectives, ultimately expanding the list to 15. The 15 planning objectives were then grouped into five categories: operational, risk, economic, community and environmental (see Table 1-1). IWRP participants used these objectives to evaluate several water supply alternatives.

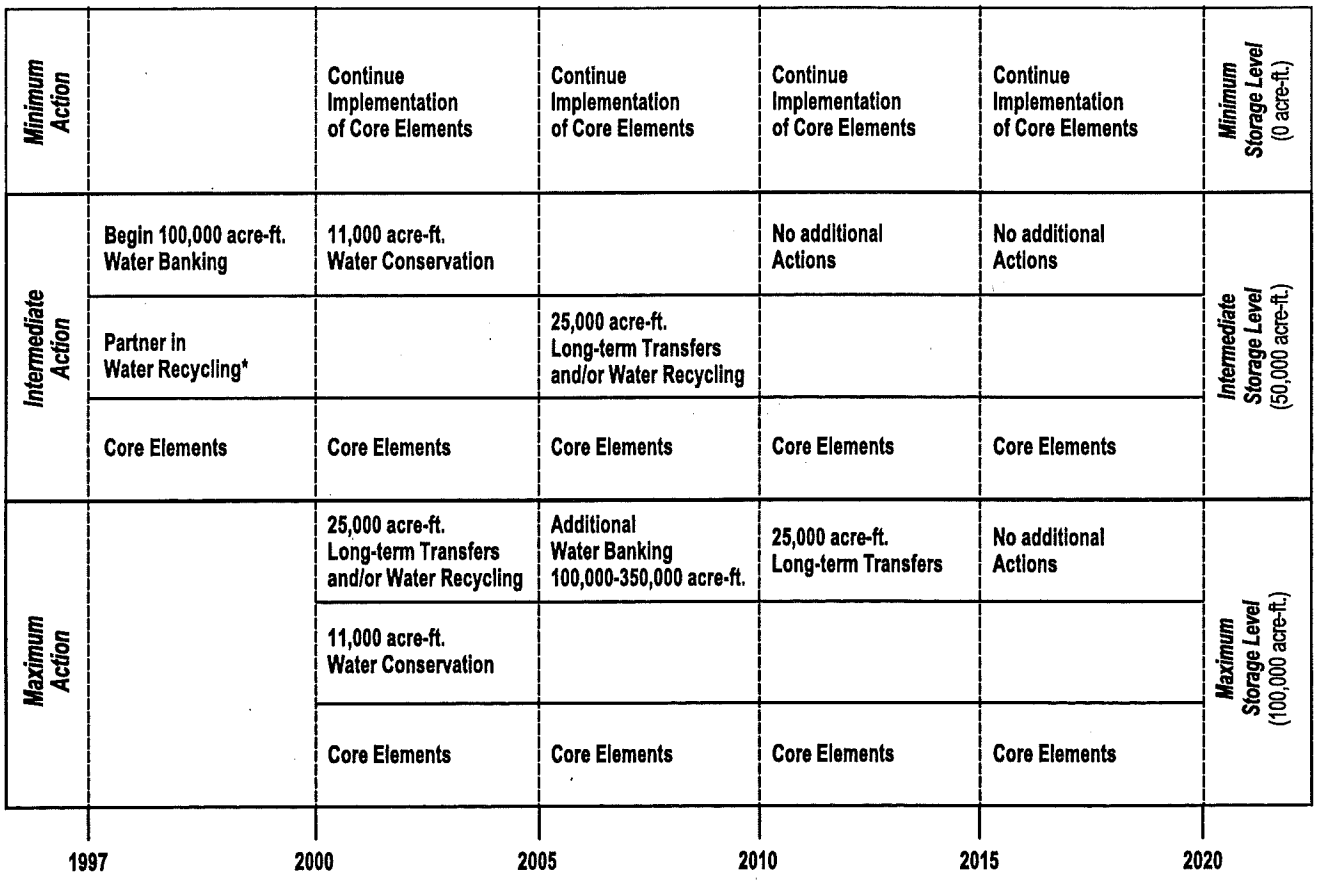
Table 1-1
IWRP Planning Objectives

IWRP Objectives	Categories
1. Provide Equal Reliability of Water Throughout the County 2. Maximize System Flexibility 3. Maximize Effective Use of Water Supply 4. Maximize Multi-Purpose Potential for Integrating District Functions 5. Meet Level of Service	Operational
6. Minimize Risk of Providing Supplies 7. Maximize Ability to Respond to Changing Conditions	Risk
8. Minimize Total District Costs 9. Minimize Rate Impacts	Economic
10. Protect Economic Well-Being of County by Minimizing Costs to the Community 11. Include Public Involvement and Maximize Public Acceptance 12. Maximize Opportunities for Recreation and Environmental Uses 13. Maximize the Quality and Treatability of Source Water 14. Promote Efficient Water Use	Community
15. Avoid or Minimize Adverse Impacts to Habitat or Ecosystems	Environmental

IWRP Preferred Strategy

The preferred strategy outlines three action programs: minimum, intermediate and maximum (see Figure 1-1). These programs correspond to a range of potential future shortage levels. The District is pursuing the intermediate action program until projected supply or demand conditions change and thus make either the minimum or maximum program more appropriate. Periodic updates are scheduled as part of the IWRP process to determine the accuracy of water demand projections and the reliability of existing baseline supplies.

Figure 1-1
IWRP Preferred Strategy



* Minimum of 6,000 acre-ft. from infill; additional recycling potential to be pursued jointly with wastewater agencies.

The core elements are central to the IWRP Preferred Strategy. These elements are activities that will: (1) ensure the validity of the baseline assumptions; (2) monitor or evaluate resource options; or (3) help meet planning objectives.

Actions to Ensure Validity of Baseline Assumptions

- *Achieve 46,000 af/year conservation.*
- *Achieve 14,400 af/year non-potable recycling.*
- *Establish an M&I shortage policy for CVP supplies.*
- *Protect reliability of SWP, CVP and Hetch-Hetchy supplies.*
- *Protect existing resources and monitor potential impacts.*
- *Implement programs to seek improvements in source water quality, protect quality of existing resources, and improve treatment capability.*
- *Improve data collection and evaluation.*
- *Expand and upgrade Rinconada WTP from 80 to 100 mgd to meet anticipated capacity requirements.*
- *Add recharge and/or treatment capacity for South County.*

Actions to Monitor and Evaluate Resource Options

- *Investigate water marketing opportunities.*
- *Investigate future storage options.*
- *Investigate increased recycling opportunities and distribution of costs and benefits.*
- *Investigate opportunities to improve reliability of imported water supplies.*
- *Investigate other resource options that have been held for future consideration.*

Actions to Help Meet Objectives

- *Assess system vulnerability.*
- *Continue public interaction.*
- *Investigate system re-operation to improve efficiency.*

Intermediate Action Program

The intermediate action program is shown in the middle third of Figure 1-1, above. It provides for a water supply shortfall of 50,000 af or a demand of 450,000 af, but not the maximum projected demand of 500,000 af. The intermediate action program combines the core elements (see sidebar), water banking, recycled water, water conservation, and long-term water transfers as follows:

- **Water Banking.** Storage of up to 100,000 af of existing District imported supplies outside Santa Clara County during wet and normal years, for use within the County in critical dry years.

- **Recycled Water.** Expansion of partnerships between the District and local wastewater agencies to distribute non-potable recycled water for urban and agricultural irrigation and industrial reuse. These programs could ultimately replace up to 25,000 af/year of long-term water transfers.

- **Water Conservation.** Implementation after 2002 of a program of voluntary conservation expected to yield an additional 11,000 af/year in water use reductions beyond the baseline water conservation program by 2020.

- **Long-Term Transfers.** Purchase of long-term transfers of up to 25,000 af/year through contracts with one or more parties for either dry-year options or entitlement transfers.

Contingency Triggers and Actions

Contingency triggers and actions were incorporated into the preferred strategy to provide adaptability to future uncertainties. During the IWRP process, the District identified several events (triggers) or circumstances that could have a significant impact on either the baseline conditions or the performance of the preferred strategy and several responses (actions) that could be implemented to adjust the strategy accordingly. These triggers and actions include the following:

Triggers

- **Identification of a CALFED solution to problems facing the San Francisco Bay/Sacramento-San Joaquin River Delta (Bay-Delta).** CALFED was initiated in 1995 by a consortium of state and federal agencies seeking to develop a comprehensive, long-term solution to water supply, quality and environmental problems facing the Bay-Delta. CALFED is scheduled to release a draft preferred alternative in

mid-1999. The draft preferred alternative is scheduled to be finalized in April 2000, with a record of decision to be reached in June 2000.

- **Failure of one or more of the preferred strategy's four key components to perform as expected.** If a preferred strategy component does not provide the critical-dry-period yield anticipated in the time frame desired, other components could be evaluated and selected as replacements.

- **Unexpected changes in water demands.** If water demands are significantly higher or lower than expected, a reevaluation of the IWRP would be required.

- **Exceeding expectations.** If a component performs better than expected, the District would not need to fully implement all components of the preferred strategy.

- **Joint ventures.** Identification of a joint venture opportunity could trigger either a reevaluation or a modification of the preferred strategy.

- **Emerging technologies.** Changes in technologies could make feasible water supply options currently being held for future consideration.

Actions

Should one or more of the above triggers occur, the District may select from the following menu of contingency actions:

- **Additional Water Banking.** This component could supplement the preferred strategy in response to unexpected changes in water demands, or in response to institutional changes brought about by the CALFED process (see Chapter 2).

- **Additional Non-Potable Recycling.** This component could supplement the preferred strategy if baseline conditions change, water conservation programs do not meet expected targets, or joint ventures are undertaken (see Chapter 3).

- **Indirect Potable Recycling.** This component could supplement either supply components or demand-management components in the preferred strategy (see Chapter 3).

- **Water Conservation Program 2.** This program could supplement the preferred strategy if water demands increase beyond the baseline projections, or if one or more supply components fail to perform (see IWRP Final Report, p. 7-8).

- **Additional Long-Term Water Transfers.** This component could supplement the preferred strategy in response to unexpected changes in water demands, failure of another component to perform as expected, or in response to institutional changes brought about by the CALFED process (see Chapter 5).

- **Additional Short-Term Water Transfers.** This component could supplement the preferred strategy in response to unexpected changes in water demands, failure of another component to perform as expected, or if a dry period is more severe than anticipated (see Chapter 5).

- **Additional Surface Storage.** This component could supplement the preferred strategy in response to unexpected changes in water demands, if another component fails to perform, or if opportunities arise that would require a reevaluation of the IWRP (see Chapter 6).

IWRP Implementation Phase

When the Board accepted the IWRP Preferred Strategy in December of 1996, staff began immediately to implement elements of the intermediate action program. Actions included:

- Continuing implementation of the core elements.

- Expansion of a water banking agreement with Semitropic Water District. (See Chapter 2.)

- Development of water recycling partnerships and changes to the District's water recycling policy to allow for increased financial participation (see Chapter 3).

- Board approval of nine guidelines to follow in pursuing future water transfer opportunities (see Chapter 5).

In addition to the above actions, in 1998 the IWRP project team also worked to develop this Implementation Plan. This plan is both a "snapshot" of current implementation status and the "roadmap" for carrying out the preferred strategy over the next three to five years. The Implementation Plan also:

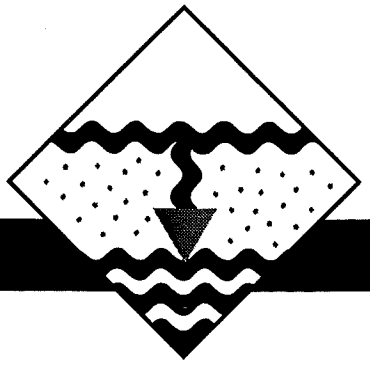
- Identifies and describes important studies to be completed as part of the IWRP Preferred Strategy implementation (see Chapter 6). These studies include an update of demand forecasts and an assessment of the vulnerability of the District's water supply system.

- Describes public involvement and outreach activities that relate to the IWRP (see Chapter 7).

- Identifies how policy issues raised by stakeholders during the IWRP process will be addressed (see Chapter 8).

Report Overview

The four key components of the preferred strategy are discussed in detail in Chapters 2 through 5. Chapters 6 through 8 address other aspects of the overall strategy such as planning activities that support the key components, public involvement activities and policy issues. Conclusions and recommendations are presented in Chapter 9.



Chapter 2: Water Banking

Background

The basic concept of a water banking program is that one party delivers water to another during normal and wet years, and the water (or a portion of it) is delivered back again when requested, generally during dry years. Banking programs commonly involve either actual groundwater recharge of the banked water, or "in lieu" recharge through direct use of the delivered surface water in place of groundwater pumping. During return years, groundwater or other supplies are used in place of water that is returned to the banking entity, and/or a certain amount of temporary crop conversion or fallowing may occur. If the water transmission facilities exist, the return of water can be accomplished through the pumping and delivery (pumpback) of previously stored groundwater to the banking entity. Other types of water banking programs can be based on shared use of surface storage facilities, or simply guarantees of return from future water year allocations or supplies.

"Water banking" means storing available water in wet years for return and use in the future when needed.

Provisions of a water banking agreement generally include the sources and quantities of water to be banked; the period of time and available capacity in which banking and withdrawals can occur; provisions for conveyance and evaporation losses, and aquifer losses if water is stored in a groundwater basin; economic benefits and costs; and criteria regarding annual operation of the program.

A key feature of a banking agreement is the exchange ratio, or the water kept by the banking agent. Exchange ratios may be constant and fixed for the term of the banking agreement, or may vary depending upon the type of hydrologic year. Potential exchange ratios average at least two to one (e.g. two af or higher of wet-year water into the bank equal to one af of dry-year water out of the bank). Exchange ratios may be as little as 1.1 to 1 percent to cover actual seepage and evaporation losses, in which case they are most likely accompanied by a significant monetary fee. Banking agreements in which a significant amount of water is left behind with the banking agent (covering more than physical program losses) may have lower fees than those in which most of the banked water is returned.

Other key features of banking agreements include the total capacity in which to store water (storage capacity), the capacity to put water into the bank (put capacity), and the capacity to take water out (take capacity). Any of these features can be a limiting factor in the use of the bank to meet dry-period needs. When the ability to put water into the bank is very limited, it can take many years to fill up the bank, and water available in wet years for banking may not be utilized. A limited take capacity can result in not being able to utilize all of the banked water in the dry years in which it is needed. The total amount of storage capacity is also important in meeting future needs, especially during sustained drought periods.

Implementation

The intermediate action program of the IWRP Preferred Strategy identified water banking as one of the components to be pursued immediately. It indicated the immediate need for up to 100,000 af in storage capacity, with the optimum level of participation in a particular program to be dependent upon the operational parameters of the program. The IWRP also recognized that as demands continue to increase, additional storage of up to 250,000 af may become appropriate, and that steps would be taken to preserve or develop opportunities for future District participation in water banking programs. Again, it was recognized that the operational parameters of a particular banking program, i.e., the annual put and take capacities, are critical features that impact these identified banking storage requirement levels.

On April 1, 1997 the District's Board took two actions regarding a strategy for the implementation of water banking. The Board directed staff to pursue a diversified water banking strategy that would 1) include participation in multiple water banking programs to improve the District's water supply reliability, and 2) be consistent with the water banking component of the IWRP. The Board also adopted the following guidelines to be used by staff in developing water banking opportunities:

a. Programs must be structurally feasible, i.e., they must include or be able to build necessary facilities for conveyance, recharge and pumpback, and the groundwater basin must be geologically capable of storing the expected quantity of water.

b. Programs must be operationally feasible, i.e., they must be able to convey or exchange existing local or imported water supplies to and from the program at times of year that water must be moved.

c. Programs must be institutionally feasible; i.e., agencies that regulate the conveyance and place of use of water supplies must be likely to approve the program.

d. Programs must be legally secure, i.e., the operating entity must be willing to enter into appropriate title and trust arrangements, and adequate conveyance rights must be established.

e. Programs must be environmentally feasible, i.e., they must not result in unmitigatable impacts to the environment or groundwater basin.

f. Programs must be economically feasible, and opportunities that compare favorably to the District's current participation in Semitropic Water Storage District are preferred.

g. Programs must be operated and administered by qualified management, i.e., recharge and pumpback facilities must be reliably maintained, groundwater conditions must be properly monitored, financial and administrative activities must be appropriate and timely, etc.

h. Programs that provide operational flexibility are preferred, i.e., programs that have flexible put and take capabilities, or which are capable of storing supplies from a variety of sources.

i. Programs that provide participation flexibility are preferred, i.e., the District can sell off or assign some or all of its participation, or at a future date relinquish an option to participate.

j. Opportunities to develop beneficial partnerships with other water agencies or State and federal resource agencies should be pursued.

k. Programs that are on a timeline for development such that they will be operational when the District needs them are preferred.

l. Programs which leverage existing water supplies, or which can be combined with other opportunities to improve the overall benefits to Santa Clara County are preferred.

The Board has adopted guidelines that address the physical, operational, institutional and environmental feasibility of proposed water banking projects.

Semitropic Groundwater Banking and Exchange Program

Consistent with the adopted water banking guidelines and the preferred strategy, on April 1, 1997 the Board approved a long-term agreement with the Semitropic Water Storage District (Semitropic) for participation in the Groundwater Banking and Exchange Program.

Like the District, Semitropic is a contractor of the SWP. Located northwest of Bakersfield, Semitropic obtains its SWP supply from the California Aqueduct through its contracts with the Kern County Water Agency. Semitropic has worked for more than ten years to develop its groundwater

In 1997, the District entered into a long-term water banking agreement with the Semitropic Water Storage District. The agreement allows the District to store up to 350,000 af in the banking program. The District now has over 93,000 af stored in the program.

banking and monitoring program. Semitropic has built capital facilities consisting of surface water distribution facilities, groundwater recharge facilities, and pumpback facilities to the California Aqueduct to accomplish the banking program.

Under the agreement, a portion of the District's SWP entitlement will be delivered to Semitropic instead of the District in each year the District banks water. Most of the water delivered to Semitropic will be used by farmers in lieu of groundwater pumping, however Semitropic does have the capacity to recharge up to 10,000 af/year to the groundwater basin. The total annual put capacity ranges from 91,000 to 315,000 af, depending upon Semitropic's annual SWP allocation. The District's 35 percent share of the program allows access to 35 percent of the annual put capacity of the program, or a range of about 32,000 to 110,000 af. A onetime distribution and evaporative loss of ten percent is applied when water is delivered to Semitropic for storage.

The future return of water will be accomplished either through an entitlement exchange, or through a pumpback and entitlement exchange. An entitlement exchange would involve a portion of Semitropic's SWP allocation being delivered to the District, in exchange for an equal quantity of the District's water remaining in the Semitropic groundwater basin. A pumpback and entitlement exchange would involve the Department of Water Resources (DWR) delivering water to the District, in exchange for an equal amount of the District's water stored in Semitropic's basin to be pumped out and delivered into the California Aqueduct for delivery to other State Water Contractors.

An important element of the Semitropic program is that water can be returned to the District in any type of water year, including critically dry years. The minimum annual quantity guaranteed for return from the total program is 90,000 af, with each participant entitled to a percentage share, based upon the level of participation. For example, with a 35 percent permanent program share, the guaranteed annual return is equal to 31,500 af, or 35 percent of 90,000 af. With return through pumpback and entitlement exchange, the total program return capability is greater, ranging up to 223,000 af/year, depending upon Semitropic's annual SWP allocation. Again, each participant's share is determined by that participant's level of participation in the program.

The District's agreement with Semitropic reserves 35 percent of the program capacity, or 350,000 af of the total 1,000,000 af storage capacity. The District has until January 1, 2006 to finalize its level of participation in the program, up to 350,000 af. Rather than locking the District into a participation level, the agreement allows the District great flexibility in determining its final level of participation in the Semitropic banking program. The term of the Semitropic agreement is until the year 2035.

A significant advantage of the agreement is that it allows the District immediate access to 35 percent of the banking program put, take, and storage capabilities. If the District elects to reduce its level of participation in the program within the time frame allowed, then the put, take, and capacity rights would be adjusted to the lower level of participation.

The total capital cost for the Semitropic program is approximately $134 million (1995 dollars). A banking participant funds that portion of the capital that represents the participant's percentage of program participation. Therefore, for a 35 percent share of the program, the District's capital obligation is $46.9 million (1995 dollars).

The cost to bank water in Semitropic while paying off the capital obligation consists of several components. All cost components were determined in 1995 dollars, and are escalated annually based upon a contractually agreed-upon index. A participant becomes vested in the program as the capital is paid. Under the terms of the Semitropic agreement, put and take fees, as well as a potential cycling fee, go toward paying a participant's capital obligation.

The cost to put water into the program ($91.56 per af in 1998 escalated from $90 per af in 1995 dollars) plus the use-of-facilities and power resources charges for conveyance and pumping in the California Aqueduct, is paid in the year in which water is delivered to the program. The take fee, or the fee to return banked water is $40 per af (1995 dollars). The take fee, actual Semitropic groundwater pumping power costs (currently about $45/af), and South Bay Aqueduct conveyance costs, are paid in the years in which water is returned. If water remains in storage for more than five years during the vesting period, a cycling fee of $20/af (1995 dollars) is charged. After a participant is fully vested at the desired level of participation, the put and take fees from the program are both $50/af (1995 dollars). No cycling fee is imposed after a participant has become fully vested in the program. Throughout the term of the agreement, an annual operations and maintenance fee of $4.51/af (1998 dollars) is paid on the participant's current level of vesting.

In 1996, through a 1-year agreement with Semitropic, the District delivered 45,000 af to the Semitropic program. The ten percent distribution and evaporative loss resulted in a net amount of 40,500 af in storage. The participation through the 1-year agreement was rolled into the long-term agreement in 1997. In 1997 and 1998, an additional 35,000 af and 23,800 af, respectively, were delivered to the program. With losses applied, the District's total amount of water banked is currently 93,420 af. This water is available to be delivered back to the District in future dry years under the terms of the Semitropic agreement.

Other Banking Programs

At Board direction for a diversified water banking program, the District continues to pursue and evaluate other potential banking programs.

A 350,000 af level of participation has been reserved for the District in the Semitropic banking program, though the final level of vesting in the program has not yet been determined. This is the level of banking needed under the maximum action program of the preferred strategy. However, to help satisfy the Board's desire for a diversified water banking program, the District continues to investigate and work with other agencies regarding other potential banking programs. Such programs could provide additional benefits to the District such as increased operational flexibility or reliability, and may be less costly.

In 1997, the District entered into a Water Reallocation Agreement with the U.S. Bureau of Reclamation (Bureau) and other Central Valley Project (CVP) contractors in the San Luis and Delta-Mendota Water Authority (SLDMWA). The purpose of the agreement was to establish a 75 percent level of reliability for the District's municipal and industrial (M&I) water from the CVP, and to minimize the impacts on CVP irrigation contractors. This agreement was identified in the IWRP as one of the core elements. As part of the Reallocation Agreement, the District and the participating CVP irrigation contractors committed to enter into negotiations for a water banking agreement. Preliminary analysis and discussions have taken place to begin scoping and quantifying the main provisions that would be included in a banking agreement. The general concept of this potential banking agreement is that of an "in lieu" program with a possible banking fee: in years when the District has water to bank, a portion of its CVP entitlement would be delivered for use in that year by the participating irrigation contractors, in lieu of pumping additional groundwater. Based upon an agreed exchange ratio, a portion of that quantity of water would be guaranteed to be delivered to the District in dry years when requested. The water returned would either be the contractors' annual CVP entitlement, or other sources obtained by the contractors for delivery to the District.

Another potential banking program the District has been investigating is partnering for participation in the potential Madera Ranch groundwater banking project. Madera Ranch consists of 13,600 privately owned acres located in southwestern Madera County. The property has been used for agricultural purposes, primarily grazing. Beneath the property is capacity to store approximately 300,000 to 400,000 af in the dewatered aquifer. The project would require development of 3,500 acres of groundwater recharge area, installation of extraction wells, and construction of a 12-mile-long canal. Water delivered to the bank would be recharged into the local basin through the recharge areas. Water returned would be pumped out of the basin through the extraction wells and delivered to the District through an exchange arrangement.

The Bureau and the SLDMWA , along with participation from the District, have conducted a pre-feasibility level investigation of Madera Ranch as a groundwater banking site and program. In addition, the Bureau recently announced plans to continue the investigation with a feasibility study. The SLDMWA has made recent efforts to help establish and participate in a local oversight committee that would help to address the local landowner concerns in the vicinity of the project.

Additional work is needed for the development and analysis of either of these potential banking programs, as well as for any other potential programs that may be proposed or developed.

Implementation Barriers, Uncertainty and Risks

The Board's April 1997 guidelines identify some of the issues that affect the physical, operational, institutional and environmental feasibility of a project. Other areas of concern that can pose barriers, uncertainty, and risks to water banking programs are discussed below.

Barriers

Local concerns in a proposed banking area may pose a barrier. These concerns may focus on the impacts the program would have on the local groundwater basin, including the quality of water that is recharged and discharged and associated fluctuations in groundwater levels. Establishment of a groundwater monitoring program and the development of operational criteria for the banking program are possible means of addressing local groundwater concerns. Other concerns may include the impact of banking facilities such as pipelines and recharge ponds on other local facilities, concerns about changes in flood drainage patterns, and the acquisition of any necessary rights-of-way. A public involvement plan and the establishment of a local oversight committee are two strategies that may be used to address these concerns.

Uncertainties

Uncertainty exists regarding laws governing the use of groundwater, and the potential for these laws to change. Because the right to use groundwater is not specific as regards quantity, overlying landowners may not know the precise extent of their individual rights. This uncertainty must be addressed in an agency's decision of whether to invest in a water banking program. Fears about groundwater basin adjudication and the ability to get banked water returned must also be addressed. One means to address these issues is by providing assurance language in the water banking contract.

Uncertainty also exists regarding the transport of water. "Wheeling" water to a banking program requires a certain level of infrastructure; if an agency lacks structural capacity it may seek to utilize the excess capacity of existing water conveyance facilities. Costs for utilizing available capacity and the priority of the banking water delivery in comparison to other facility deliveries are issues that must also be addressed.

Sections 1810 through 1814 of the Water Code provide for the joint use of excess capacity in water conveyance facilities. However, the interpretation of these Water Code sections is the subject of recent legal dispute. In addition, there have been several recent efforts to amend the Water Code through legislation, specifically to address water wheeling issues. For the past year, the State Water Contractors have been identifying and addressing wheeling issues as they pertain to the contractors and the operation of the State Water Project (SWP). How these issues are ultimately resolved, both for the SWP and other facilities, will have large impacts on the ability to utilize a banking program and the total costs of doing so. The uncertainty regarding the ability to wheel water can be addressed to a certain extent by the District's participation in the forums regarding wheeling.

Risks

Risks associated with water banking include over-investment, under-investment, and "failure" of the program.

Over-investment may result in the District owning a greater quantity of banking capacity than is necessary to meet future needs. The banking capacity can be represented as either the total amount of water that can be stored, the annual capacity to get water back from the banking program, or a combination of the two. Over-investment in the Semitropic Banking program can result in higher capital costs, and higher long-term annual operations and maintenance costs. Over-investment can also result in the lost opportunity to invest in other components because of the dollars invested in water banking. However, investment in water banking programs can be seen as investment in a transferable asset. One strategy to address over-investment can be the subleasing or outright sale of the asset to another entity. Subleasing can be done on a short-term or long-term basis, providing the District flexibility in assessing its future need for water banking capacity. In this way, the District would be able to recoup its prior investment.

Under-investment may result in the District not having enough water stored for future needs and not being able to meet the County's future water demands as planned. This can be due to vesting in the banking program at a level lower than is necessary to meet future demand, or not committing the funds to bank adequate supplies when available. In

addition, because the take capacity of a program can be a real constraint in the ability to get water back when it is needed, under-investment can also occur from not investing in adequate storage capacity with an associated take capacity. As a result, the District could end up with water banked in the program but a very limited ability to return it in the years in which it is needed.

Failure of the water banking component may occur for many reasons. Physical failure of the program is one potential culprit: groundwater quality concerns or the impact of groundwater pumping on the groundwater basin and surrounding water districts and landowners can be cause for water not being returned from the program as originally planned. Changes in allocations from the SWP and CVP is another possible cause for failure: because some programs depend upon future water allocations from these projects, decreases in the reliability of SWP and CVP supplies can impact the ability of the water banking entity to return water. For example, the success of the Semitropic program depends upon the ability to both pump groundwater and to exchange entitlement from the SWP for water stored in the groundwater basin, so the absence of one of these return mechanisms would cause the program to fail.

The risk of project failure can be minimized through a strategy of diversification of the water banking program. The Board has already taken the action of directing staff to pursue participation in multiple water banking programs, in part to minimize this risk.

Relationship with Other Preferred Strategy Components

Water banking programs can be combined with long-term water transfers (see Chapter 5) to provide an even greater level of reliability than either component can provide separately. The water available under an entitlement transfer during average to wet years can be banked to provide greater supply during the dry years. The availability of storage capacity in a water banking program can improve and enhance the value of a long-term transfer.

Storage in a groundwater banking program can also increase the reliability of the District's existing supplies from the SWP and the CVP. Supplies available in wet years can be stored for future return and use by the District during dry years.

Monitoring

Participation in the Semitropic program is tracked by District Imported Water staff from both a water and dollar perspective. The dollars spent that contribute towards funding the capital for Semitropic facilities go towards the District's level of vesting in the program and rights to the program capacities. Because potential cycling fees and future take fees contribute towards capital, these future and potential costs must be estimated and tracked as well. The final level of vesting in the program under the current agreement will be determined by January 1, 2006. Until that time, the level of vesting in the program will be tracked annually.

The quantity of water banked in the Semitropic program is important in annual operations planning and in forecasting supplies available under a drought scenario. The annual delivery of the District's SWP entitlement to the Semitropic program, as well as the total amount in storage, is tracked annually. The District must also report this information to DWR on an annual basis.

District participation in any future banking programs will also be tracked on an annual basis. This would include annual participation, total storage in the bank, the capacity to return water in a future year, as well as any costs associated with the program.

Implementation Schedule

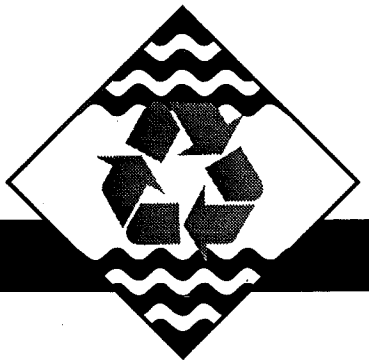
Because the implementation of a diversified water banking program is dependent upon external factors and outside agencies, a schedule for implementation per se has not been developed. However, consistent with the IWRP, the District has already begun implementation through participation in the Semitropic program. Implementation must remain flexible enough to respond to banking opportunities as they develop. It is recognized that some options may not be available in the future, and actions may need to be taken in order to participate, or to reserve the right to participate in the future.

Summary

Table 2-1 summarizes the District's water banking activities and associated implementation time frames.

Table 2-1
Summary of District Water Banking Activities

Activity	Purpose	Responsible Unit / Project	Start Date / Duration
Semitropic Water Banking Program	To store District water supplies for use during dry years	Imported Water Unit	1996 to 2035
Water Banking, other programs	To store District water supplies for use during dry years	Imported Water Unit	1999 to 2020



Chapter 3: Recycled Water

Background

Recycled water is one of the four key components of the District's water supply mix. The IWRP core elements include a baseline amount of 14,400 af/year of recycled water. The preferred strategy includes up to an additional 25,000 af/year of recycled water or water transfers per year.

The District and several cities in the County are participating in ongoing and expanding water recycling systems, most of which are designed for various forms of non-potable recycled water. Future uses for dual plumbing, surface storage, groundwater recharge and advanced treatment of recycled water for indirect potable reuse are being studied for feasibility on both a regional and local basis.

In the last few years the Board has reaffirmed its commitment to recycled water. In July 1997, the Board passed Resolution No. 97-60, which updated previous resolutions in support of the expanded use of recycled water. And in the 1998-99 Budget, one of the Board's water supply strategic objectives was to "Promote the development and use of recycled water." The Water Utility Business Plan has identified the outcome expected for this strategic objective as "Implementing existing recycled water partnerships consistent with the IWRP and the defined role of recycled water" for the next two years.

Also during 1997 the Board increased its financial incentive for the use of recycled water from $93 per af to $115 per af. This financial assistance is generally based on the concept of the avoided cost of new water supplies and applies to recycled water used to supplement the County's water supply and replace firm water demands that are presently met by supplies from the District. The net result of this financial arrangement is that, without partnership agreements, the sewage rate payer pays all the cost for recycled water except that being reimbursed by the District. This District share, which is paid by water users, is now limited to the $115/af reimbursements. Partnership agreements now being developed with each of the cities owning sewage treatment plants will help determine the fair share to be paid by water users to insure that recycled water will be available in the future.

In 1997, about 2,000 af of recycled water was used for landscape irrigation in the County. With the pending completion of the South Bay Water Recycling Project (SBWRP) in 1999, deliveries of more than 5,000 af/year are expected. Approximately 20,000 af/year of non-potable recycled water could be developed throughout the County by year 2020. Several non-potable water recycling projects are currently under development in the County by local agencies and/or the District. These projects, which will fulfill the water needs defined in the District's preferred strategy, are described in Table 3-1 and in the text below.

Table 3-1
District-Wide Water Recycling for Water Supply Uses:
Current, Projected, and Potential Yields and Estimated Costs

Water Recycling Program	Funding	Present Annual Use (1999)	Projected Short - Term Annual Use (2005)	Potential Long-Term Annual Use	Estimated Recycled Water Unit Cost
So. Bay Water Recycling (SJ, Santa Clara & Milpitas)	Local Only	5,000 af/year	9,000 af/year	14,400 af/year	$1,000/af
	Local, State & Federal	NA	14,000 af/year	37,000 af/year	$1,300/af
Sunnyvale	Local Only	300 af/year	1,000 af/year	2,000 af/year	$1,000/af
	Local, State & Federal	NA	2,000 af/year	4,000 af/year	$1,000/af
South County Regional Wastewater Authority - SCRWA (Gilroy / Morgan Hill)	Local Only	100 af/year	1,000 af/year	3,000 af/year	$700/af
	Local, State & Federal	NA	2,000 af/year	6,900 af/year	$1,780/af
Palo Alto	Local Only	400 af/year	400 af/year	400 af/year	$1,000/af
	Local, State & Federal	NA	Unknown	4,700 af/year	$1,000/af
District-Wide Total	Local Only	5,800 af/year	11,400 af/year	19,800 af/year	$925/af (Average)
	Local, State & Federal	NA	18,400 af/year	52,600 af/year	$1,290/af (Average)

South Bay Water Recycling Program (Cities of San Jose, Santa Clara and Milpitas)

The South Bay Water Recycling Program (SBWRP) is part of a regional effort with the joint purposes of reducing freshwater discharges from the San Jose/Santa Clara Water Pollution Control Plant into San Francisco Bay wetlands and supplementing the long-range water supplies to Santa Clara County. The $140 million Phase 1 project, which is now partially operational and will be completed during 1999, includes construction of a transmission pump station, two on-line booster pump stations, one closed tank reservoir and 60 miles of pipeline. When fully operational later this year, this system is expected to serve more than 200 customers for landscape irrigation, industrial uses and other purposes. The program is being funded by the cities of San Jose, Santa Clara and Milpitas and the five sanitary agencies whose wastewater is treated by the San Jose/Santa Clara Water Pollution Control Plant. The U.S. Bureau of Reclamation and the District are providing additional financial support.

Present projections show estimated deliveries for 1999 of 4,000 to 5,000 af. Estimates for the year 2000 are for deliveries of 7,000 to 9,000 af. The system currently has the capacity to deliver up to 11,000 af/year.

As part of South Bay Water Recycling's Phase II, planning has begun to expand delivery system capabilities to provide for deliveries of 8,000 af/year by the year 2002, and potentially divert up to 53,000 af/year by 2020. Since these programmed expansions provide for a variety of potential uses, such as streamflow augmentation and creation of wetlands, not all of these amounts would be available to directly supplement the water supply. Reasonable projections of recycled water production dedicated to water supply are 9,000 to 14,000 af/year by 2005 and 25,000 af/year by the year 2020. The amount of recycled water in use will depend upon the availability of acquiring state and federal funding to supplement local funding of projects. Within this same period of time, it is very likely that additional delivery system expansions will be provided by ongoing commercial and planned residential developments. These development expansions would probably expand delivery volumes for water supply uses an additional 10 to 15 percent.

The average unit cost of recycled water from the South Bay Water Recycling Program is estimated at $700 to $1,300 per af.

Sunnyvale Water Recycling

In 1997 the District entered into a Joint Participation Agreement with the City of Sunnyvale for the development and utilization of non-potable recycled water. Prior year deliveries of recycled water have been up to

220 af/year used mainly for landscape irrigation at Bayland Park and the city's Municipal Golf Course. Recent program analyses state the 1998 recycled water deliveries were estimated to be 300 af/year with expansion of up to 500 af/year in 1999. Sunnyvale is now planning to expand their distribution facilities, which would provide for deliveries of 750 af/year by the year 2000 and 2,000 to 4,000 af/year by the year 2005. Since some deliveries will be used for environmental purposes, the amounts attributed to water supply needs are conservatively estimated at half of the total deliveries. The projection for water supply needs for the year 2005 is 1,000 to 2,000 af/year. The projection for the year 2020 ranges from 3,000 to 4,000 af/year.

The average unit cost of recycled water from the Sunnyvale Program is estimated at $800 to $1000 per af.

South County Regional Wastewater Authority, SCRWA (Cities of Gilroy and Morgan Hill)

In 1977, the District, the City of Gilroy and the Gavilan Water Conservation District began a partnership to construct and operate a recycled water system extending from the SCRWA treatment plant southeast of Gilroy to several customers along Hecker Pass Road. Initially this system delivered primary treated recycled water. Due to the low quality of the water and several recurring operational problems, the system has operated sporadically over the last 20 years. In 1997, the District and SCRWA agreed to enter a partnership with SCRWA as supplier, the District as wholesaler, and the City of Gilroy as retailer to develop a water recycling project in South County. This project will rehabilitate the existing pipeline and add additional pipelines, pump stations and a closed tank reservoir. This agreement, which will be executed in 1999, will provide for the delivery of 100 af/year in 1999, 500 af/year in 2000 and 1,000+ af/year after the year 2000. Future expansions of the treatment plant and the delivery system over the next five to ten years could provide for expanded deliveries of recycled water to agricultural areas around Gilroy and to municipal and industrial uses north to the City of Morgan Hill. The present expansion plans project a conservative delivery of 3,000 to 4,000 af/year.

The average unit cost of recycled water from the SCRWA Program is estimated at $700 per af for the initial 1,000 af now being developed and $1,780 per af for the remainder of the 6,900 af shown in the 2020 master plan projection.

Palo Alto Recycling Project (Cities of Palo Alto and Mountain View)

Currently the Palo Alto Regional Water Quality Control Plant (PARWQCP) delivers 400 af/year of recycled water to the cities of Palo Alto and Mountain View. Based on the project alternatives recommended in their master plan, a total of 4,700 af/year of recycled water could be developed within the plant's service area. This recycled water is not expected to displace District supplies because this entire service area is supplied from the Hetch-Hetchy system, not from the District.

The average unit cost of recycled water from the Palo Alto Program is estimated at $800 to $1,000 per af.

Indirect Potable Water Recycling

The District, in cooperation with the City of San Jose and the Bay Area Regional Water Recycling Program, is investigating the feasibility of pursuing indirect potable reuse in the County. This would include using advanced treated recycled water of appropriate quality for groundwater recharge and/or surface reservoir blending and delivery to the District's potable water treatment plants (WTPs). This issue has been included in the partnership agreement with the City of San Jose, with both the District and the City performing parts of the study. The District is also following closely the progress of the City of San Diego's Indirect Potable Reuse project, now in the design stages. Public acceptance of this project (or the lack thereof) will play an important role in determining the feasibility of proceeding with indirect potable reuse in Santa Clara County. Because the San Diego project is the first of its kind in California, it may expand regulatory, political and technical assumptions and provide improved scope, cost and scheduling data.

Key Issues Affecting the Future of Recycled Water

Several key issues relate to the use of recycled water and its acceptance as a major component of the District's long-range water supply program. These issues are summarized below:

Partnerships

It is very important that the District develops and maintains partnerships with each of the Publicly Owned Treatment Works (POTWs) producing recycled water. This ensures recycled water will be considered as a valuable contribution to the water supply and not just as an expedient way to dispose of excess effluent.

Price Relative to Potable Water

As the price of potable water rises, many customers will find they can save money by using recycled water. The District's 10-year water rate projection indicates steadily increasing water rates, primarily due to the capital investment needed to upgrade the District's three WTPs to meet anticipated SDWA regulations. In addition, the District has the ability to set water rates as a policy tool to encourage or discourage certain types of water use relative to others.

Existing Subsidy of Agricultural Water

Agricultural water is currently subsidized by both the District and statewide by the federal government. The District is presently evaluating its position regarding agricultural subsidies. Providing the same District subsidy for recycled water that we now provide for agricultural uses is a likely short-term solution. A longer-term solution would be to provide a direct subsidy to farmers based on their continued use of farmland, and base this subsidy on the area being preserved from development. With this type of subsidy, the District would then charge the market price for water. This would hold farmers financially neutral, and would encourage water conservation and the use of slightly less costly recycled water.

Effect of Droughts

It is an accepted fact that Santa Clara County will experience periodic droughts. During water shortage years, many customers may embrace recycled water because of its availability and reliability, and never switch back to potable supplies. It is likely that new developments and existing large-volume users would find it cost-effective to build their own connections and main extensions so they can receive recycled water. This would have a long-term effect of greatly expanding the network of delivery pipelines and increasing the projections for the ultimate delivery potential of each system.

Ongoing Development

The same type of expansion could occur with ongoing developments even in years of maximum water supply availability. New developments may find it cost-effective to use recycled water for major landscaping, recreational or industrial uses. They may build their own main extensions and connections and thereby gradually increase the reach of the existing networks and the volumes of projected deliveries. Even if these main extensions are not economically driven, they may occur for environmental reasons. Large developers may choose this method to mitigate the effect of additional fresh water effluent into the San Francisco Bay, to mitigate the effect of new potable water connections, or as an environmental feature of their development from a public relations point of view.

Bay Area Regional Water Recycling Program

The Bay Area Regional Water Recycling Program (BARWRP) is a partnership of water and wastewater agencies committed to maximizing water recycling in the Bay Area. It includes the District, the California State Department of Water Resources, and the United States Bureau of Reclamation. This program has begun preparation of a Bay Area-wide master plan for recycling highly treated wastewater to provide a safe, reliable and drought-proof new water supply. This master plan will:

- Identify the Bay Area's potential water recycling opportunities on a series of computerized geographic information system maps.
- Develop local and regional alternatives for delivering recycled water to identified opportunities.
- Develop a state-of-the-art decision model that assesses the value of environmental enhancements, improved water supply reliability and other benefits.
- Identify public policy hurdles to water recycling and develop action plans to overcome the hurdles.
- Initiate programs to demonstrate the advantages of water recycling throughout the region.

The BARWRP Master Plan is expected to lead to identification of regional water supply benefits not previously recognized through local water recycling assessments. This regional approach will maximize the water yield out of a potential recycled water production capacity expected to reach 650,000 af/year by the year 2020. The study is expected to examine the feasibility of indirect potable reuse in the Bay Area. It is likely that the District's Anderson Reservoir supplemented with SBWRP advanced treated recycled water would be one of the case studies of the plan.

Statewide Acceptance

The successful expansion of numerous other recycled water programs within the State of California is crucial to the success of the District's program. As these programs become more visible and successful, they will make the obstacles involved in local programs easier to overcome. For example, increased use of recycled water for agriculture statewide could help overcome reluctance by local farmers to use recycled water and would provide assurance that food processors and large-scale markets would not reject their produce as unacceptable. Another example would be the statewide use of recycled water for dual plumbing of commercial, industrial and high-rise residential buildings. If projects in other commu-

nities are unsuccessful or create negative publicity, efforts to expand the program in Santa Clara County may be affected.

Implementation Barriers, Uncertainties and Risks

Barriers

If technical solutions relating to the quality of recycled water are not developed, potential customers will not willingly use recycled water. If public perception is negative towards recycled water, potential uses may not materialize. If the water supply share of the cost of treating, transporting and marketing the recycled water cannot be shown as comparable to other sources of water, the District may not continue its partnerships with the cities operating sewage treatment plants.

Delays in project implementation and changes in community economic conditions are other potential barriers. The possibility that certain markets may not materialize or that distribution systems may not develop at projected rates will affect the ability of a facility to deliver as projected. Changes in regulations can jeopardize the effectiveness of capital investments and/or the ability to produce the volume of recycled water projected. However, the biggest barrier to increased usage of recycled water is the potential lack of public acceptance and the perception of customers gauging public acceptance for individual local use.

Uncertainties

While recycled water has various advantages today, there are questions about its availability and affordability in the future. Is it prudent now to spend dollars on its development so that its availability in the future will be assured? Will the increasing volumes of delivery materialize? Will water supply get a return on its investment? Will gradual and increased acceptance of recycled water and its continuing use in new developments be much greater than we now predict? Will major use in agriculture become a reality and therefore free up other potable sources for domestic and industrial uses? As the years go by, these questions will be answered—in part, perhaps, by the effects of droughts and continued statewide population growth.

Risks

The basic risk associated with recycled water is determining the amount of investment that should be made now to meet projected future water demands. There is a risk in overinvesting and finding that other alternatives would have been more cost-effective. There is also some risk of

creating an unintended market expansion and increased demand for water. Conversely, there is a risk in under-investing and realizing that opportunities for partnerships, grants or even cost-effective construction and right-of-way costs have been lost. The chance to expand recycled water use through state and federal assistance in the CALFED process is probably a "once in a lifetime" opportunity.

Recycled water may in some instances bring risks to the quality of the valley's ground water basin. Mitigation of this risk must be provided by new technology, advanced treatment or special handling before extensive use of recycled water could be allowed.

Recommended Strategies

- Continued District support for this program is warranted. Expanding the partnerships with local POTWs is the initial step for the future. Over time, increased District resources will be necessary to support expanding programs.
- A feasibility study on adding indirect potable reuse to the District's IWRP Preferred Strategy should be performed in the near future, with regional cooperation.
- The District should continue to use conservatively low projections of Countywide use of recycled water.
- Continued annual evaluation of the production and use of recycled water will inform the District of the need to reevaluate its long-term viability.
- Evaluation and use of the District's water rate structure as a policy tool to create incentives for recycled water use and substitution for potable or other raw water use should be investigated.
- Cooperation with other agencies on a statewide basis is important to continued acceptance of the District's local programs.

Relationship with Other Preferred Strategy Components

Water recycling is integrally related to water transfers. As the use of recycled water increases, the need for long-term water transfers could decrease. For this reason, the District has decided to postpone pursuing 25,000 af/year of water transfers until the success of recycled water has been evaluated.

The cities operating POTWs have led in the development of programs that are responsive to their needs to dispose of treated effluent. As the District develops partnerships with each of the cities involved, the water supply planning aspect of recycled water will become more sophisticated.

Increased District involvement in partnerships with the POTWs will for the first time stress the use of recycled water as a baseline component of the annual water supply. With this type of encouragement it is likely that 1) the baseline yield of 14,400 af/year will be achieved by 2002 and could increase up to 25,000 af/year by 2005, and 2) that regular growth of the systems, periodic droughts and continued development will produce yields that far outpace present predictions for the years after 2005.

Monitoring

Methods of monitoring the use of recycled water have been and will continue to be included in the partnership and reimbursement agreements with the cities operating POTWs. Monitoring the effects that the continued use of recycled water will have on soil conditions and groundwater quality must be part of each new program.

Presently, the agreements provide for the District and each city to jointly predict a five-year delivery schedule and have the cities report on their actual deliveries for the preceding year. The District uses these numbers to plan for short-term volumes of recycled water as a part of the overall water supply picture.

Implementation Schedule

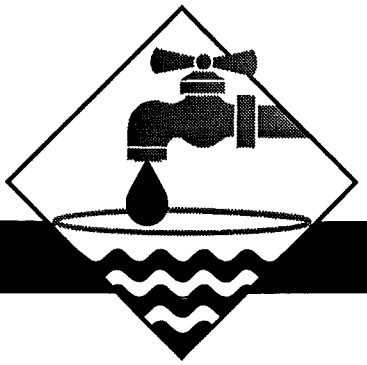
Over the next two years, the District plans to continue to develop a partnership role with the cities and ensure that all decisions being made now for recycled water systems take into account the need for recycled water as a major component of the long-term water supply. In the short term, this means becoming more involved with the City of San Jose as it implements its South Bay Water Recycling Phase II program and as it makes incremental additions to the Phase I pipeline network. At this same time, formal agreements with SCRWA and the City of Gilroy need to be executed to expand the District's South County recycled water system. Continued support of the Sunnyvale program will be maintained and coordination and monitoring of the Palo Alto program will continue.

Summary

Table 3-2 summarizes the District's water recycling activities and associated implementation time frames.

Table 3-2
Water Recycling Implementation Plan

Activity	Purpose	Responsible Unit / Project	Start Date
Partnership with South Bay water recycling on Phase 2 Study	Provide for long-term water supply needs in North County	Project Management/ Water Recycling	July 1998
Partnership with South County Regional Wastewater Authority	Provide for long-term water supply needs in South County	Project Management/ Water Recycling	April 1999
Policy on Pricing of Agricultural Water	Provide incentives for the use of recycled water in agriculture	Water Utility and Project Management	Late 1999
Bay Area Regional Water Recycling Program	Provide for regional coordination of water recycling	Project Management/ Water Recycling	Ongoing



Chapter 4: Water Conservation

Background

By the year 2020, the District expects to save over 57,000 af/year from its conservation programs. Water savings totaling 46,100 af/year will be realized through the District's existing and planned efforts; these are outlined in Table 4-1 and described in detail in Appendix J in the IWRP Final Report. A further expansion of the District's efforts, entitled Program 1, is one of the cornerstones of the preferred strategy and is expected to yield an additional 11,000 af/year. Table 4-2 details the water savings associated with Program 1.

In order to ensure that the IWRP conservation goals are realized, the District will conduct a Water Conservation Baseline Study (Baseline Study), a Water Conservation Master Plan (Master Plan), and a Monitoring and Evaluation Program (M&E Program). This chapter presents the proposed strategy for development of these analyses and a detailed implementation plan for the District's Water Conservation program.

Table 4-1
Baseline Water Use Reductions Anticipated by 2020 by Sector in af/year

Sector	2000	2005	2010	2015	2020
Residential Interior	12,900	19,200	22,500	22,300	22,300
Residential Exterior	5,800	9,700	12,000	13,400	13,400
Commercial/Industrial Interior	2,100	2,500	2,700	2,700	3,000
Commercial/Industrial Exterior	4,700	7,300	7,500	6,700	6,400
Agricultural	700	1,000	1,000	1,000	1,000
Total (af/year)	**26,200**	**39,700**	**45,700**	**46,100**	**46,100**

Table 4-2
Program 1 Water Use Reductions over Baseline in af/year

Program 1 Water Use Reductions over Baseline in af/year	
1. Enhanced Residential Landscape Financial Incentives	1,500
2. Enhanced Commercial / Industrial Audits	1,400
3. Enhanced Commercial / Industrial Financial Incentives	2,700
4. Low-Volume Dishwasher Retrofits	400
5. Residential New Construction: Water-Efficient Landscaping	5,000
Total	**11,000**

The Water Conservation Baseline Study

The District and its retailers have implemented a number of water conservation programs and watched as customers' water use decreased during the drought of 1987-1993. While the District can easily measure the overall reduction in water use, there are a number of things that it cannot readily determine. For example, how much of that water reduction was a permanent change in response to ongoing conservation programs versus a more temporary response to the drought crisis? How much of the savings can be attributed to the Landscape Audit program verses the Ultra-Low Flush-Toilet (ULFT) Rebate Program? Was it technical assistance, financial incentives, or simply education that caused the customers to change their water use behavior? The answers to these and other, similar questions are crucial to the development of reliable, accountable, and cost-effective conservation programs.

To determine how and why conservation programs work and which customer groups are conserving, the District will conduct a Baseline Study. A sample group of 300 to 500 customers will be studied over a four-month period. The results of the Baseline Study will provide the foundation for the M&E Program described at the end of this chapter. Study objectives are to:

- Establish a baseline from which future water savings are measured.
- Update the District's demand reduction potential.
- Clarify customers' current attitudes and practices regarding water conservation.

- Identify the type and market penetration of water-using appliances and fixtures currently installed within the County.
- Develop water use profiles for each of the major municipal and industrial customer categories: Single-Family Residential, Multi-family Residential, Commercial, Industrial, and Institutional.
- Determine customers' attitudes and opinions regarding the District's anticipated future conservation programs.

The Baseline Study will provide the springboard for future conservation efforts, and thus should be started as soon as possible. A Request for Proposal should be circulated in summer 1999, and a consultant selected by late fall. The study will take approximately one year to complete.

The Water Conservation Baseline Study will focus on a sample group of 300 to 500 customers. The study is designed to give the District a better understanding of its customers' attitudes and practices regarding water conservation. Study results will help the District establish a baseline from which future water savings are measured and determine the penetration of water-using hardware and appliances within its service boundaries.

Coordination Required with Retail Water Suppliers

Without the cooperation of retail water suppliers, the Baseline Study cannot be conducted. The District should make the retailers aware of the Study and ask them to commit to participate as soon as possible. It is recommended that a series of briefing sessions be conducted with the retailers' conservation administrators. An initial briefing meeting has been held with the retailers; however, a second meeting will be held early in the Summer of 1999 to provide an overview of the District's proposed conservation efforts and to further discuss the Baseline Study in greater detail.

The retailers' assistance will be required to determine the survey sample sizes, provide background information, and ensure that surveyed customers' water use is representative of the categories' consumption. Most of the required data is typically available through agencies' customer billing information systems. A positive, cooperative relationship with the retailers can help prevent logistical problems in obtaining and reviewing the desired information.

The City of San Jose has enlisted the aid of a consultant to conduct its own water conservation baseline study. The first phase of the study (Phase I) was conducted during 1998 and focused on residential customers only. It included portions of the three District retailers with customers located inside the City of San Jose boundaries, representing approximately 55 percent of the District's customers. In May 1999, the City shared with the District the information and data acquired from the study. The City was also contemplating conducting a Phase II Study that would include an even greater proportion of District residents. This would have been an excellent opportunity for the District and the City to share costs and resources for an expanded baseline study. However, the City has recently decided not to proceed with the Phase II Study. The District will

maintain close contact with the City's representatives to benefit from any lessons learned during the Phase I work.

The Water Conservation Master Plan

The water conservation Master Plan will provide the framework within which the future conservation program will operate. It will present the big-picture view of the District's conservation efforts and provide an implementation strategy for all elements of the future conservation program.

Once the Baseline Study is complete, the District will not only have a better understanding of its customers' attitudes and beliefs regarding water conservation, it will know the distribution of hardware, appliances, and landscape and irrigation system characteristics within its service boundaries. Armed with this information and the new Best Management Practices (BMP) requirements, the District can then design and/or modify its conservation program to meet stated goals. Preparation of a Water Conservation Master Plan is the next logical step in the District's effort to design and implement an effective, accountable, long-term water conservation program.

The objectives of the water conservation Master Plan are as follows:

- Clarify the District's and its retailers' roles regarding water conservation efforts in the County.
- Present the District's future water conservation plans including program descriptions, costs, and savings estimates.
- Develop an implementation strategy for the District's future water conservation efforts, including a program budget, staffing plan, and implementation schedule.
- Further define the parameters of the M&E Program, including more refined staffing and cost estimates.

The Master Plan will provide the framework within which the future conservation program will operate. Instead of conservation measures being implemented piecemeal in response to drought crises or legislative mandates, implementation and operation of conservation measures will proceed systematically. The Water Conservation Master Plan will review programs implemented to date by the District, its retailers, and other relevant agencies to determine which have the best potential for success in light of the findings of the Baseline Study. It will present the big-picture view of the District's conservation efforts and provide an implementation strategy for all elements of the future conservation program.

The Water Conservation Master Plan will also provide a forum for discussion and debate of conservation policy issues as the District reexamines its role regarding water conservation in the County. As a signatory to the 1991 Memorandum of Understanding Regarding Urban Water

Conservation in California (MOU), the District is committed to comply with the new wholesaler BMP. The "Wholesale Agency Assistance Programs" BMP defines a wholesaler's support role in terms of financial, technical, and programmatic assistance to its retail agencies implementing BMPs. In light of a possible BMP certification and enforcement process coming from CALFED, the wholesaler and retailer relationship is an emerging issue that will require significant attention.

The District currently enjoys a special cooperative partnership with the water retailers in regional implementation of the BMPs. It is imperative that the District work closely with the water retailers to more clearly define each entity's roles and responsibilities. The District will also need to conduct special meetings with the City and County of San Francisco Water Utility Commission (SFPUC) to resolve specific issues pertaining to those retailers who receive water from both the District and the SFWUC. Issues with policy and cost implications should be explored within the Water Conservation Master Plan. Discussions with the retailers and the SFWUC have commenced in 1999 and will continue throughout the year.

After the District adopted the IWRP, Exhibit 1 of the MOU was revised, modifying the BMPs. The savings implications from these changes have not yet been defined for the District. Consequently, the changes and the resulting impacts on the District should be explored in the Water Conservation Master Plan as well. In addition, the estimated demand reductions for the Baseline and Program 1 components should also be reviewed in light of the Baseline Study findings. Finally, the District's existing drought management policies and contingency programs may need to be examined and revised to reflect input from the Baseline Study and the Master Plan.

Implementation Barriers, Uncertainties, and Risks

Barriers

A potential barrier to successfully achieving the water conservation component of the IWRP goals involves the District's partnership with the water retailers. To implement successful and cost-effective water conservation programs on a regional or Countywide basis, the cooperation and commitment of the water retailers is critical. This potential implementation barrier coupled with the uncertainty of the CALFED outcome makes this a vital issue for the successful implementation of the water conservation program.

The framework that CALFED is entertaining highlights the need for regional coordination of BMP implementation and recommends a menu of

wholesaler water supplier compliance alternatives. A BMP certification and enforcement scenario for Santa Clara County will require the District and its retailers to clearly define their relationship and to establish a coordinated approach for achieving BMP compliance.

The District has held preliminary meetings setting the stage for future discussions on defining respective roles and responsibilities. Retailers have expressed their preference for a regional responsibility for MOU compliance. Under this approach, the District would assume regional responsibility and be evaluated as though it was a single, large retail service area. An agency would not be exposed to water-based sanctions as long as the region as a whole was in compliance with the MOU. For this approach to work successfully, the cooperation and participation of all retailers is crucial.

An additional issue is the overlapping areas of interest in Santa Clara County: The District and the City and County of San Francisco Public Utilities Commission (SFPUC) share the cities of Mountain View, Sunnyvale, Santa Clara, Milpitas, and the San Jose Municipal Water System. The ownership of water conserved in these areas and the potential application of water-based sanctions by CALFED are just some of the underlying issues that require attention and resolution. Preliminary discussions have begun with the SFPUC and meetings with the "shared" retailers and others are expected to be held during the year 2000. The District has maintained the a cooperative partnership with retailers in the regional implementation of the BMPs over the past few years and is preparing the road map to further refine and formalize this relationship within the next year.

Uncertainties

The District's future water conservation program could also be impacted by the outcome of the CALFED Bay-Delta Program. It is uncertain what the final specifications for water use efficiency will include. Although certification and enforcement mechanisms are likely to be part of the final CALFED outcome, it is unclear whether or how much funding assistance, grants, loans, etc. will also be included. Depending on what the final urban water conservation framework prescribes and the mix of funding assistance proposed, the District's water conservation programs may be impacted in terms of program implementation, documentation, reporting and budgeting. To manage this uncertainty and be poised for change, the District has remained actively involved in the CALFED and California Urban Water Agencies/Environmental Water Caucus (CUWA/EWC) process.

In addition to the impending CALFED outcome, there are other uncertainties associated with water conservation. For example, the federal legisla-

tion Knollenberg Bill HR 623 (formerly HR859) could pass and thereby repeal the water efficiency standards of the Federal Energy Policy Act of 1992. A repeal of the national standards could result in a degradation of product performance and quality. Consequently, this legislation could undermine the state standards, as well as the District's residential conservation programs.

On the local front, National Pollution Discharge Elimination System (NPDES) requirements or the City of San Jose's Action Plan to address them could change and possibly cause program implementation challenges for the District. Because of the current flow cap limiting the City of San Jose's discharges of treated waste water to the South Bay, the City's Water Efficiency Program is aggressively pursuing indoor water conservation. If the City remains under the flow cap requirements of 120 million gallons per day (mgd) as it did in 1998, it is likely the City will decrease its program intensity and funding commitment. Currently, the District's program relies on a high level of effort and commitment from the City of San Jose and tributary service areas. The District may need to augment or cost-effectively redesign certain programs to ensure regional implementation of and compliance with the water conservation BMPs. Whatever the uncertainty, it is imperative that the District remain actively involved in various regulatory, legislative, and local policy processes.

Risks

The risks associated with implementation of the water conservation program will primarily depend on the actual water savings realized and the type of water year that occurs. Perhaps the greatest risks would be associated with the extreme success or failure of the conservation program. The worst case scenario would be a dry water year and an unsuccessful conservation program resulting in serious water shortages for District customers. Another difficult situation would be a very successful conservation program and a very wet water year. Both of these scenarios would likely result in rate impacts.

When calculating water rates, the District balances its costs with expected water sales revenues and establishes rates to recover costs. The District plans to make future financial investments in supply enhancements and water conservation programs. Regardless of the outcomes of these programs, the District will have additional financial obligations, or increased costs. To a large extent, the District's costs are fixed; if too much water is conserved (customers exceed the conservation goals) the District will be forced to raise rates to recover costs. Conversely, if the District's conservation program achieves significantly less than the 57,000 af/year goal, supply shortages could also occur. Since less water would be sold (because less water would be available), this scenario could result in rate increases as well. During very dry years with more serious supply

shortages, District customers could experience life-style impacts and landscaping losses in addition to the rate impacts. The degree of the impacts would depend on the severity of the water year and degree of success/failure of the water conservation measures. The degree of success of the other IWRP key components will also have an impact on the water conservation program.

More specifically, the water conservation program could fail to achieve the underlying assumptions that make up the baseline water use reduction goals. For instance, the percentage of commercial and industrial sites actually making the irrigation retrofits recommended in the landscape audit program could fall below the percentage selected in the baseline assumption. Or, a program element could encounter risk based on a technology imperfection. For example, depending on the ULFT make, changing a worn out flapper with an incorrect replacement can inadvertently increase the flush volume. If these program elements fail to meet their underlying assumptions, they may jeopardize the ability of the water conservation program to achieve the baseline water use reduction goals.

A successful M&E Program will minimize the risks associated with the water conservation effort. The District will closely track the water savings associated with its conservation programs to ensure actual performance meets stated goals. Each of the individual measures will be monitored separately. A benefit/cost analysis will be conducted biannually to coincide with the California Urban Water Conservation Council's (CUWCC's) reporting requirements. If a conservation measure does not meet the cost-effectiveness standards established by the District or the CUWCC, or encounters risks that jeopardize successful implementation, the measure will be redesigned, revised, or replaced. In addition, the current projected water use reductions for 2020 and underlying assumptions will be reassessed during the Baseline Study and adjusted based on the findings.

The water conservation program will be continuously evolving and conservation staff will regularly review and revise measures to reflect consumer product changes, recent rigorous water savings studies, emerging conservation technologies and MOU or BMP modifications.

Relationship with Other Preferred Strategy Components

If the District's water conservation efforts fall short or surpass stated goals, there will be implications for the other components of the preferred strategy. The implications for under- or overachieving conservation goals are relatively straightforward, assuming the demand projections are representative of actual demand.

If the actual conservation water savings are close to the goals, no response may be required. If the actual savings exceed the goals by a large margin, the District will be in an enviable position and may be able to forgo some planned capital expenditures. If the District has already committed, through dollar expenditures or contractual obligation, to participate in one of the three supply-enhancing components of the preferred strategy, it may be able to market any surplus water that is realized. If the actual savings are much lower than the IWRP goals, other conservation measures may have to be substituted for efforts that do not prove successful.

If it is determined that the required conservation savings cannot be realized without exceeding the District benefit/cost criteria, the District may need to investigate augmenting the other components of the preferred strategy. However, since the BMP conservation measures have been successful for water agencies in the past, it is anticipated that they will continue to yield significant water savings. In addition, information obtained in the Baseline Study and the Master Plan will be incorporated into the conservation program design, further improving its chances for success.

Another issue to consider is the possibility that CALFED's current efforts might prove successful and BMP implementation could become mandated. The District would then be required to fulfill the BMP commitments regardless of stated IWRP conservation goals, unless it can demonstrate that it should be exempt from a particular BMP requirement pursuant to the MOU exemption criteria. Under those circumstances, a certain level of conservation would always be in effect unless the BMPs were rescinded. It is not yet clear whether the savings from the revised BMP conservation measures will fall short, meet, or exceed the IWRP conservation savings goals. This question will be answered after the completion of the Baseline Study and documented in the Water Conservation Master Plan.

Monitoring

The focus of the current water conservation monitoring effort has been the tracking of activity levels and program costs. In order to ensure future savings goals are achieved and water conservation programs are successful, the District must enhance its existing monitoring program to more rigorously quantify actual water savings. An improved and formalized M&E Program would increase the overall reliability of the water conservation program. In addition, the recently revised MOU includes minimum record-keeping and reporting requirements for agencies to document BMP implementation levels. While the MOU is currently voluntary, the District made a commitment to adhere to BMP implementation, and plans to comply with the relevant reporting requirements. These guidelines will be incorporated into the revised M&E Program.

In order to determine how much water is saved by a particular conservation measure, one must quantify the amount of water that was used prior to implementation of the measure. Thus, the success of any monitoring and evaluation effort will be contingent on the availability and quality of the source data. Since the District must rely on its water retailers to provide the monitoring data, an additional layer of complexity exists.

Ideally the District would like billing information to be disaggregated by Business Classification Codes or at least by the following customer categories: Single-Family Residential, Multi-Family Residential, Commercial, Institutional, Industrial, and Large Landscape. Some retailers maintain this level of detail; others do not. One of the first tasks that must be completed prior to design of the M&E Program is a detailed survey of the billing and record-keeping systems of the water retailers. The District will work with the private water retailers to develop a reporting methodology that does not infringe upon or compromise the intent of those retailers' customer privacy policies. The District must also investigate how the information can be electronically transferred from the retailers' databases to the District in an ongoing fashion. Extraction, transformation, and transportation software will be needed to transfer the information from one database to another.

The M&E Program will build on the District's existing conservation monitoring program to more rigorously quantify actual water savings. It will include development of an evaluation strategy for each of the District's existing and planned conservation measures, and a database to track water conservation activities and calculate water savings.

The success of the District's water conservation program will ultimately be judged by the quantity of water saved. However, the ability of a program to yield water savings is not the only measure of its success. For example, if the marketing effort associated with a proven conservation program is unsuccessful, customers will not know about the program. Consequently, the District must monitor more than just water consumption in order to evaluate conservation programs. Thus, another key part of the program will be development of an evaluation strategy for each of the existing and planned conservation measures. The strategy will take into consideration the customer type, the targeted number of customers (the number that must be contacted), the number of participating customers (those expected to actually implement the measure), the marketing approach (how the customers will be contacted), the installation or implementation method, the cost of the measure, the expected savings, and the measure's cost-effectiveness. Other pertinent information includes demographic data, program-specific conservation data, and demand data.

The District will also develop a database to track water conservation activities and calculate water savings. A target structure will be developed for the database using the findings of the Water Conservation Master Plan. The design should be flexible to respond to future changes in the conservation program and reporting requirements. The database will contain not only water consumption data, but also program and customer characteristics along with program costs.

Implementation Schedule

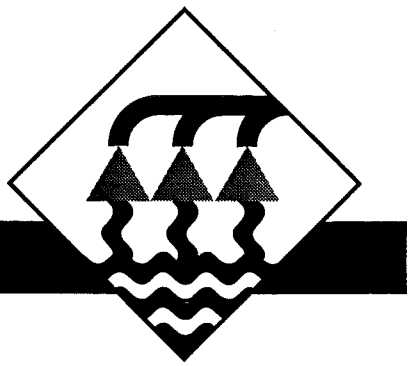
The Baseline Study will begin in late 1999. It will be followed by the Water Conservation Master Plan effort in late 2000 and development of the Monitoring and Evaluation Program in 2001.

Summary

Table 4-3 summarizes the water conservation activities discussed in this chapter and associated implementation time frames.

Table 4-3
Summary of District Water Conservation Activities

Study Name	Purpose	Responsible Unit / Project	Duration (start date)
Water Conservation Baseline Study	Establish a baseline from which future water savings are measured and determine the penetration of water-using appliances and devices.	Water Conservation Unit	12 Months (late 1999)
Water Conservation Master Plan	Prepare a detailed Action Plan for the District's future water conservation program.	Water Conservation Unit	3-5 Months (late 2000)
Monitoring and Evaluation Program	Ensure the District implements a reliable water conservation program.	Water Conservation Unit	6 Months (mid-2001)



Chapter 5: Water Transfers

Background

Water transfers are one of the four essential components of the IWRP Preferred Strategy. Water transfers can generally be categorized as long-term or short-term. The preferred strategy included long-term transfers; however, short-term transfers were recognized as a possible contingency action to be used in response to a trigger event with a significant impact on either the IWRP baseline conditions or on the District's ability to execute the preferred strategy.

The two primary types of long-term transfers are: (1) water rights or entitlement transfers; and (2) dry-year option transfers. Water rights or entitlement transfers involve purchasing an appropriative water right or contract entitlement from another SWP or CVP contractor. Some amount of imported supply would be available from the water transfer in every year, usually more in wet years and less in dry years. Such water right or entitlement transfers can be permanent assignments, or can be for a defined period of time with options to renew.

Dry-year option transfers include entering into a contract with another party or parties to purchase additional imported water during dry periods. These agreements usually include an option payment due every year, with an additional amount payable in the years that the water is actually delivered.

Short-term, or spot market water transfers usually involve an agreement to purchase water within a one to two year period. Short-term transfers can be obtained from a State Drought Water Bank if it exists when needed, from other CVP or SWP contractors, or from independent water rights holders.

The intermediate action program of the IWRP Preferred Strategy identified the need for 25,000 af of long-term transfers and/or water recycling in the 2005 to 2010 time frame. If conditions change such that it becomes necessary to pursue the maximum action program, the need for this additional supply would occur sooner, from 2000 to 2005. However, some transfer opportunities should be considered sooner if they will not likely be available in the future.

The preferred strategy calls for 25,000 af of long-term water transfers (and/or recycling) beginning in 2005. While the approval process for short-term transfers is less involved than that required for long-term transfers, the availability and cost of short-term transfers in future dry years are subject to greater uncertainties. Hence, they have been reserved as a contingency action to augment the preferred strategy if necessary.

Implementation

On February 17, 1998 the Board adopted the following guidelines to be used by staff in developing water transfer opportunities:

a. Water transfers must be operationally feasible; i.e., the transfer must be able to be conveyed to the District or the District's water banking programs when the water is available and needed.

b. Water transfers must be institutionally feasible, i.e., agencies regulating the transfer, conveyance, and place of use of water supplies must be likely to approve the transfer.

c. Water transfers must be environmentally feasible, i.e., impacts to the environment, groundwater basin, and third parties in the transferring area must be minimized and reasonably mitigated.

d. Water transfers must be economically feasible, and opportunities that compare favorably to other IWRP water supply options are preferred.

e. Water transfers that improve the District's imported water quality are preferred; water transfers that would degrade the quality of existing sources of supply will not be considered.

f. Water transfers from Delta export area sources are preferred for long-term agreements because of the uncertainty surrounding the requirements and costs of long-term transfers through the Delta and potential environmental impacts of additional Delta diversions. However, short-term transfers from sources north of the Delta may be considered. This criterion will be reevaluated if conveyance conditions through the Delta change substantially in the CALFED solution.

g. Water transfers that provide multiple benefits are preferred, i.e., transfers that provide benefits such as access to conveyance facilities or priority of conveyance along with water supply.

h. Opportunities to develop beneficial partnerships with other water agencies or State and federal resource agencies should be pursued.

i. Water transfers that can be leveraged or combined with other opportunities to implement the IWRP and improve the overall benefits to Santa Clara County are preferred.

Current Opportunities

Because of the IWRP timeline for water transfers, the District has not actively solicited transfers from interested parties. However, the District does consider and evaluate transfer opportunities as they become available; two of these are described below.

Key issues limiting the ability to transfer water include the effects of individual and cumulative transfers on a groundwater basin; concerns about the impacts to the local economy, individuals, downstream users, or the environment; concerns about water rights assurances; access to conveyance capacity, especially across the Delta; and the lack of a uniform regulatory process governing transfers. The District continues to participate in various forums that are working to address these transfer issues.

SWP Agricultural Entitlement Transfer

As a result of the Monterey Agreement among the State Water Contractors, 130,000 af of agricultural water contracts from the SWP was made available for transfer. District staff evaluated the potential for some of the available contract entitlement transfers to meet the District's needs, and explored partnership agreements with other agencies to share use of this potential supply. However, due to the District's level of need and the lack of suitable partnership arrangements, in December 1998 the Board directed staff to discontinue pursuing a potential transfer. The transfer opportunity would have been a costly dry-year supply for the District without a partnership for the costs and available wet year supply.

CVP Joint Contract Assignment

In November 1996, Pajaro Valley Water Management Agency (Pajaro Valley) entered into an agreement with two property owners in Mercy Springs Water District (Mercy Springs) for the permanent contract assignment of 6,260 af of CVP agricultural water. There was a strong interest by Pajaro Valley to complete the assignment in order to have the water available for restoration of its groundwater basin in the future; however, local voters passed a referendum in June 1998 which placed a 10-year moratorium on building the pipeline needed for delivery of imported supplies to their service area. This moratorium has effectively delayed Pajaro Valley's prospects for delivery of water from the Mercy Springs contract assignment.

Pajaro Valley subsequently contacted other water agencies, including the District and Westlands Water District (Westlands) regarding the possibility of entering into a joint contract assignment for CVP agricultural water from Mercy Springs. On December 15, 1998, the Board authorized the District's General Manager to execute a joint assignment contract with Westlands and Pajaro Valley for the Mercy Springs water supply. This transfer agreement was executed by all parties in May 1999.

The joint contract assignment shares costs among the three agencies and includes the following key terms and conditions:

- A minimum of 20,000 af will be delivered to the District over the 20-year term, with a maximum of 10,000 af during the first ten years; within these limits, the District has first option on supplies allocated under the joint contract.

- Pajaro Valley has the option to buy out some or all of Westland's share after ten years; if Pajaro Valley doesn't develop the capability to deliver this CVP supply within 20 years, the joint assignment continues with only the District and Westlands.

- The Bureau of Reclamation will recognize the District, Westlands, and Pajaro Valley collectively as the contracting party during long-term contract renewal negotiations.

Implementation Barriers, Uncertainties, and Risks

The Board's guidelines identify some of the issues affecting the operational, institutional, and environmental feasibility of water transfers. Other areas of concern that can pose barriers, uncertainties, and risks associated with the implementation of water transfers are discussed below.

Barriers

One possible barrier to water transfers, especially if groundwater substitution is used as the transfer mechanism, is the impact of an individual transfer on a groundwater basin. If there are numerous transfers from an area, the cumulative impact of transfers is also of great concern. The collection and analysis of groundwater monitoring information before a proposed transfer can be used to establish a "baseline," and subsequent groundwater monitoring during and after a transfer may help in determining any transfer impacts.

Another issue regarding water transfers is that of impacts on third parties to the transfer. This includes impacts to the local economy in the area transferring the water, and those individuals whose livelihoods may be impacted because of the transfer; impacts to other legal users of water (usually downstream users); and impacts to the environment. Avoidance and mitigation of third-party impacts, as well as the implementation of a water transfer tax or fees, are some of the methods that have been identified to address third-party impacts.

Uncertainties

Since the 1980's, legislation has been enacted to encourage voluntary water transfers. In 1992, Congress enacted the Central Valley Project Improvement Act (CVPIA). One provision of the CVPIA is that it authorizes individuals or districts that receive CVP water to transfer all or part of the CVP water that they contract for. There have also been a number of proposed state bills that would further govern the water transfer market. However, in spite of the existing legislation that addresses transfers, there are still a number of areas of uncertainty that hamper the ability to transfer water.

One area of uncertainty is that of water right assurances. Existing water rights law provides protection of the underlying contract or water right on which the transfer is based. However, some agricultural water users are concerned that water saved or transferred for other uses might be forfeited after a period of years, or that politically, it will be difficult to recover water from an urban area which has come to rely on the transferred water. New legislation or specific transfer contract provisions may be able to address this issue, by assuring the transferring party that water transferred for a defined period of time would be recoverable in the future.

Another area of uncertainty in regards to water transfers is the lack of a uniform regulatory process outlining the necessary transfer approval and permits and the entities that should have regulatory authority and approval of a transfer proposal. The role of the local water agency and the public in the transfer review and approval process is also an issue of debate. Tied into this is the concern that water in a proposed transfer should not be sold for an excess profit, or at an excess cost to the public. These issues may be addressed through further legislation and the development of water transfer guidelines.

Risks

One of the risks associated with water transfers is whether the water will be available when it is needed. Reliance on the availability of adequate short-term water transfers during drought events can carry a higher risk than depending upon long-term transfer arrangements. The IWRP Preferred Strategy recognized this increased risk, and therefore included long-term transfers as a solution component, while identifying the use of short-term transfers as a contingency action.

There can also be a risk regarding the future reliability of long-term contracts for entitlement transfers, especially if the underlying water supply contract is subject to renewal. However, if the entitlement transfer

involves SWP or CVP water, this risk would be similar to the risk that the District currently experiences with its existing SWP and CVP contracts. The risk of unreliability may also be addressed in the transfer contract terms and cost.

Relationship with Other Preferred Strategy Components

The IWRP recognized that the component of water recycling could be used in place of water transfers if cost and operations issues could be resolved. As additional supply components, both water transfers and water recycling can be used to meet the County's future needs. If additional demands are met through water recycling, the need for water transfers will decrease proportionally, and vice versa. This is a consideration the District's Board will likely make when deciding upon opportunities to participate in water recycling programs and in purchasing water transfers.

As stated in the Board's water transfer guidelines, preferred water transfers are those that can be leveraged or combined with other opportunities to implement the IWRP and improve the overall benefits to Santa Clara County. The water available under an entitlement transfer during average to wet years can be banked to provide an even greater supply during the dry years. The availability of storage capacity in a water banking program can improve and enhance the value of a long-term transfer for the District.

Monitoring

The District staff in Imported Water will track any water transfer agreements entered into by the District in the next three to five years. With a transfer structured like the proposed Pajaro Valley transaction, District operations staff would be making annual decisions regarding whether to take some of the District's share or not. District staff will also continue to monitor and participate in activities and efforts taking place on a statewide basis that may impact the availability, reliability, and value of water transfers.

Implementation Schedule

The IWRP is used as the guidance document in the consideration of and implementation of water transfers. The IWRP Preferred Strategy intermediate action program identified that the need for transfers would not occur until 2005 to 2010. Therefore, a schedule for implementation of water transfers has not yet been developed. However, it is recognized that

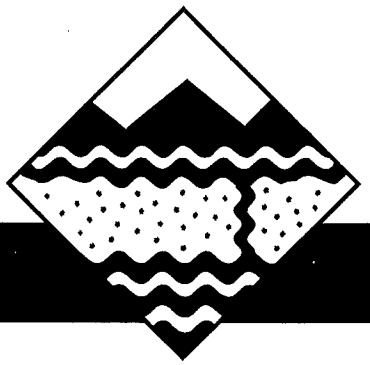
implementation must remain flexible enough to respond to transfer opportunities that develop sooner. Some transfer opportunities may not be available in the future, and actions may need to be taken now in order to participate or to reserve the right to participate in the future.

Summary

Table 5-1 summarizes the District's water transfer activities and the associated implementation time frame.

Table 5-1
Summary of District Water Transfer Activities

Activity	Purpose	Responsible Unit / Project	Start Date / Duration
Water Transfers	To provide additional long-term dry year supplies to meet the District's needs.	Imported Water Unit	1996 to 2035



Chapter 6: Water Supply and Water Quality Activities

Background

This chapter describes water supply planning activities that will be performed over the next five years to support the implementation of the IWRP Preferred Strategy. These include:

- Water Demand Projections Update
- Comprehensive Reservoir Watershed Management Program
- General Groundwater Quality Monitoring Program
- Groundwater Protection Programs
- Groundwater Basin Management Plan
- System Vulnerability Assessment
- Reoperation of District Facilities
- Capturing Additional Local Streamflows
- Monitoring In- and Out-of-County Surface Storage Options
- Imported Water Program activities to secure and improve water supply reliability and water quality.

These activities are included among the core elements, which are designed to ensure the validity of the baseline IWRP assumptions, monitor or evaluate resource options, or help meet certain planning objectives.

Water Demand Projections Update

The water demand projections update will help the District refine and narrow the upper and lower water demand anticipated through year 2020, and to identify a most likely projection within the range.

Water demand projections are an integral part of water supply planning. The District is currently updating its water demand projections by Water Service Area (WSA) through the year 2020, using the latest versions of the computer program for developing residential demand projections (IWR-MAIN), Association of Bay Area Government (ABAG) demographic data and water use data. A demand range will be computed, including upper, lower and most likely demand projections. The District is also redesigning the modeling approach to facilitate future updates as the data change.

There are several reasons for updating the District's water demand projections. First and foremost, the projections used in the IWRP process were based on ABAG's Projections 90, which was published in 1990 and was the most current demographic data available at the time. In 1998 ABAG published Projections 98, which contains more up-to-date information.

Another reason for the update is the age of data used for the IWRP projections. These projections were based on water use patterns observed in the County in the early 1980s. Since that time, the County has experienced a severe multi-year drought during which water usage dropped more than 25 percent from pre-drought levels. An analysis of more recent water use will determine what changes in water use patterns remain since the drought's end.

IWRP projections relied on water use data from the City of Milpitas. Effort has been taken since those projections were developed to collect additional data that may enable calibrating for other water service areas in the County. In addition IWR-MAIN has been updated with new equations derived from additional water use analysis throughout the country, including new studies in California and the Southwest.

Preliminary analyses show that the updated demand projections will fall within the existing IWRP water demand planning range. The update is expected to refine and narrow the range band, and to identify a most likely projection within the range.

Components of the water demand projections update include the following:

- Updating the water use model, using the latest version of the IWR-MAIN program. Due to limitations in the previous IWR-MAIN computer program, the District relied on a spreadsheet-based program using equations taken from IWR-MAIN. The limitations in the older

program have been removed in the current version of IWR-MAIN, and the IWR-MAIN program itself will be used to develop the water use model.

- Updating the water use data used to calibrate and verify the water demand model. Although IWR-MAIN has default values that can be used to project water use, it is recommended that the model be calibrated and verified with local water use data to the extent possible. As described above, the previous water demand projections were based on City of Milpitas water use data from the 1980s. For the update, current water use data from multiple water retailer areas will be used instead.

- Refining the nonresidential M&I projections by SIC major category. Due to data availability limitations, the previous water demand projections used a single per-employee coefficient of 135 gallons per employee day for projecting nonresidential M&I demand. Instead, nonresidential demands will be developed using ABAG projections of employment by job sector for SIC major categories and IWR-MAIN per-employee water use coefficients. Although there is insufficient local data for deriving County-specific per-employee coefficients by job sector, the projections will be verified with local data to the extent possible.

- Updating the demographic drivers (households, employment by job sectors) with the latest ABAG projections by census tract.

- Working with the Water Conservation Unit to update the water conservation savings estimates.

- Submitting projections and results to local agencies for review. The demographic projections by city will be reviewed with the city planning departments in the County, and the water use model results and water use projections by WSA will be reviewed with the County's water retailers.

This analysis and a report are scheduled for completion in mid-1999.

Protection of Source Water Quality

A number of programs have been implemented or are being revisited and upgraded to monitor the quality of the surface waters and groundwater that contribute to the County's water supply.

Surface Water Quality Programs and the Comprehensive Reservoir Watershed Management Plan

The District plays a key role in surface water quality protection through the Comprehensive Reservoir Watershed Management Plan, which monitors how land use and activities in the District's reservoir watersheds impact water quality. The District also participates in the development of state drinking water quality regulations and other activities related to drinking water quality.

Surface waters that may be destined for any of the District's treatment plants are carefully monitored for quality in order to meet the regulatory compliance requirements of state and federal drinking water standards and laws. District water quality and laboratory staff abide by a rigorous schedule of routine source water sampling and laboratory analyses in accordance with applicable drinking water quality regulations. These regulations are in a continuing and dynamic state of development.

The principal regulations that guide the District's water quality programs are the 1986 Amendments to, and the 1996 reauthorization of, the SDWA. The California Department of Health Services (DHS) is responsible for implementing the SDWA in the state. In addition to monitoring as mandated by the SDWA, the District has taken other initiatives to help ensure the reliability of imported and local surface water. The Comprehensive Reservoir Watershed Management Plan (CRWMP) was initiated in early 1994 to address growing awareness, both locally and nationally, that keeping contaminants from entering source water is often more cost-effective than treating the water later to remove those contaminants. The CRWMP is a monitoring and assessment program to determine how land use and activities in the District's reservoir watersheds impact water quality.

Recent amendments to the SDWA include a new initiative that will require states to implement source water protection programs that, in many respects, parallel efforts already in place at the District through the CRWMP. The U.S. Environmental Protection Agency (EPA) is developing a program at the national level, and the initial stage is called the Source Water Assessment Program (SWAP). The EPA ultimately envisions a partnership between state and local agencies for the program's implementation. California, because it is a primacy state, is statutorily mandated to develop and implement a state SWAP that conforms to federal SWAP guidance elements and includes advisory committee(s), public hearings, and other outreach efforts. The District is participating in the development of the state SWAP and is reevaluating the components of the CRWMP with a view to coordinating activities to align with the state SWAP requirements.

The District is continuing its proactive role in the development of drinking water regulations through its participation on water quality committees of the California/Nevada Section of the American Water Works Association (AWWA), the Association of California Water Agencies (ACWA), CUWA

and other workgroups as they arise. District water quality staff participates actively on the South Bay Aqueduct Contractors Water Quality Task Force. The South Bay Aqueduct (SBA) supplies water to treatment plants in Alameda and Santa Clara counties and is the primary source of supply for the District's Penitencia WTP. Members of the task force are vigilant about the quality of the water their respective treatment plants receive; the water is from a common source, and the members share a common interest in its treatability and reliability. DWR, which operates the SBA, has been responsive to the concerns and issues raised by the task force members, and the District expects to continue its participation on the task force.

Groundwater Quality Programs

Approximately half of the County's potable water is groundwater. By analogy, the drinking water aquifer plays the same role for half of the County's potable supply as the man-made storage, conveyance, and treatment systems play for the other half.

The District's groundwater quality protection programs include the General Groundwater Quality Monitoring Program, the Leaking Underground Storage Tank Oversight Program, the Water Quality Liaison Program, the Nitrate Management Program, and the Groundwater Assessment and Protection Program.

Groundwater occurs in a natural purification system, where the soil filters and removes bacteria and chemicals. When significant amounts of contamination are introduced into groundwater this natural purification system may be overwhelmed and a contaminant plume forms. It is an expensive and complex task to identify and remove these contaminant plumes from the groundwater. Because it is far more economical to protect the quality of groundwater than to treat it when it comes out of a well (or abandon the well and seek a different, uncontaminated well site), District efforts have been in place for many years to help monitor and protect the County's groundwater resources. These efforts are described below:

- **General Groundwater Quality Monitoring Program.** Monitoring groundwater quality is a key ongoing effort. The District has groundwater quality information dating to 1950, and in 1980 revised its General Groundwater Quality Monitoring Program. A modernized database is being constructed as a repository for all the data presently available and for the results of future sampling and analysis. Data are assembled from water samples taken from a network of wells distributed throughout the County. The results of analyses performed by water retailers for their wells are sent to DHS and shared with the District. The program provides a "window" into the health of the County's groundwater and provides information enabling the District to evaluate the status of groundwater quality, to track trends and changes, and to highlight any areas of special concern.

- **Land Use Review.** Property development proposals that the District receives (such as leachfield systems or other wastewater systems that are not connected to a publicly owned sewer system) are carefully reviewed for any potential adverse impact on groundwater.

- **Well Ordinance Administration Program.** The first line of defense to protect groundwater is proper well construction and destruction. The District's Well Ordinance Administration Program is ongoing. All well constructions and destructions must be permitted in accordance with District Ordinance 90-1 and the specifications set forth in the District's well standards which are more stringent that the State well standards. Proper well construction and destruction minimize the possibility of future migration of contaminated water through an otherwise open path to an uncontaminated drinking water aquifer.

- **Contamination Prevention and Correction Programs.** Despite widespread groundwater protection efforts, contamination has occurred in a few limited parts of the County's deep drinking water aquifer. Costly mitigation measures have been undertaken by the responsible parties, and work continues to prevent further contamination. Other District programs to prevent contamination and/or identify and take corrective action include the Leaking Underground Storage Tank Oversight Program (LUSTOP), the Water Quality Liaison Program, the Nitrate Management Program, and the Groundwater Assessment and Protection Program to inventory abandoned wells, toxic release sites, areas served by septic tanks, and agricultural land that is subjected to fertilizer and pesticide applications.

Imported Water Program activities to secure and improve water supply reliability and water quality

Since imported water accounts for over half of the county's water supply, it is imperative that the District protects and seeks to improve the reliability and quality of its imported supplies from the State Water Project, the Central Valley Project, and Hetch-Hetchy. This is also one of the core elements that the District will continue to implement as part of the IWRP implementation process. Major activities in this area undertaken by the Imported Water Program include:

- **Participation in the CALFED process to resolve Bay-Delta issues.** The key to improved reliability of the District's imported supplies is in a successful resolution of environmental and water management issues related to the Bay-Delta. The District's Board and staff members are heavily involved in several related processes including: the CALFED Bay-Delta Program, the ag/urban process, the State Water Resources Control Board's water rights hearing, and other coalition activities to maximize the District's influence and leverage in

protecting its imported water interests. The CALFED process holds the most promise in providing a comprehensive solution to improve ecosystem functions, water supply reliability, water quality, and Delta levee stability.

- **Participation in the Central Valley Project Improvement Act (CVPIA) implementation process and contract renewal process to protect urban supply reliability and to ensure a balanced outcome.** Since the CVPIA was passed in 1992, the District has been engaged in various processes related to the implementation of this complex but ill-defined and wide-ranging Act. Although the District supports the objectives of CVPIA, most of the provisions in the Act have the potential to significantly reduce CVP deliveries south of the Delta. It is therefore in the District's interest to ensure a balanced implementation of the Act such that delivery shortages to urban areas can be kept to a reasonable level.

- **Monitor and participate in processes to improve state water project supply reliability.** The District is participating in processes undertaken by the State Water Project and its contractors to explore opportunities to improve the State Water Project yield and/or dry year supply reliability. One example is the American River Basin Project which potentially could develop conjunctive use opportunities in the American River Basin.

- **Monitor and participate in processes to protect and improve reliability of Hetch-Hetchy supply.** The District is engaged in a 3-way dialogue between the San Francisco Public Utilities Commission and Hetch-Hetchy contractors in Santa Clara County regarding opportunities to improve the reliability of Hetch-Hetchy supplies into the county. The District is also engaged in a regional effort within the Bay Area to explore opportunities for exchanges or other avenues to improve water quality and supply reliability.

Groundwater Basin Management Plan

In 1998, the District began gathering and documenting information on the management of the County's groundwater resources, including surface water that is stored and/or percolated in the aquifers. The District is currently developing a report summarizing these groundwater management activities. A formal plan that integrates these activities has yet to be assembled and adopted. The District will evaluate the advantages and disadvantages of formally submitting the plan to DWR as an AB 3030.

Following this project, the District will investigate methods to improve its understanding of the groundwater basins and enhance its groundwater management practices. These methods will include optimization of the

The Groundwater Basin Management Plan is documenting management of the County's groundwater resource. The ultimate goal of this project is to expand our understanding of the groundwater basins in order to enhance groundwater management practices throughout the District.

conjunctive use program, increasing the knowledge of basin hydrology, refinement of aquifer parameters and subsidence thresholds and other hydrological parameters, developing a groundwater model for South County and recalibrating the models for North County.

Periodic Vulnerability Assessment of District Water Supply Systems

A comprehensive assessment of the District's system and program vulnerability is necessary to determine overall water supply reliability and to develop contingency and mitigation strategies. Potential impacts to the District's water supply system could result from episodic incidents such as extreme climatological or seismic events, gradually occurring phenomena such as corrosion or siltation, and accidental or intentional events associated with human activities. The District's system elements and areas of potential vulnerability are indicated in Table 6-1 below.

Over the next five years, this assessment program will begin to collect and review existing studies, recommend any program mitigations or elements, recommend and sponsor any additional or supplemental studies, and periodically review vulnerable areas.

Table 6-1
Areas of Vulnerability for District Facilities

Facilities	Seismic	Landslide	Siltation	Sabotage	Corrosion	Contamination	Climatological/ Accidental
Treatment Plants	●	●		●	●	●	●
Reservoirs	●	●	●	●		●	●
Pipelines	●	●		●	●		
Pumping Plants	●			●	●		●
Recharge Facilities	●		●	●	●	●	
Groundwater Basin	●			●		●	
External Facilities	●	●		●	●	●	●

Reoperation of District Facilities

Of the many modifications to District operational priorities that were discussed in the IWRP, two will be investigated in detail in the next 5 years: the expansion and upgrade of the Rinconada WTP, and the delivery of 2,500 af/year of water from Lexington Reservoir to the San Jose Water Company's Montevina Treatment Plant. The District will also work with San Francisco Water Department (SFWD) on an intertie with the Hetch-Hetchy aqueduct, and will continue to monitor the need for a new treatment plant and/or recharge facilities in South County.

Several modifications to the District's existing operational priorities were discussed in the IWRP report. These include greater utilization of Hetch-Hetchy supplies, building a new South County WTP or additional recharge, prioritizing imported water over local water, storing imported water locally, and expanding the Rinconada WTP. Such modifications could provide additional water supply reliability for the County by maximizing the use of local water supplies and increasing the flexibility of the District's system.

District staff will continue to coordinate with San Francisco Water Department for an intertie of the District's Milpitas pipeline and the Hetch-Hetchy aqueduct for short-term transfer of emergency supplies. Staff will also continue to monitor the need for a new treatment plant and/or recharge facilities in South County to augment supplies should groundwater quality deteriorate to an unacceptable level. The Coyote and Llagas Sub-basins are still considered sufficient to meet the area's near future water needs. There is also a need to investigate improved recharge in the westside as a result of loss of spreader dams. Alternatives include potential flashboard sites and off-stream recharge along Saratoga Creek.

District staff has also completed preliminary investigations of the possibility of prioritizing imported water over local water, and storing imported water locally. Although these operational changes could benefit the water supply, they carry a risk of greater frequency and magnitude of flooding (with possible greater District liability); thus, no further action is recommended.

Over the next five years the District will investigate the expansion of the Rinconada WTP, as well as the possibility of delivering raw water to the San Jose Water Company's Montevina Treatment Plant. These are described in more detail below.

Expansion and Upgrade of Rinconada Water Treatment Plant

Expanding the capacity of the Rinconada WTP from 80 to 100 mgd would add system capacity and increase the operational flexibility of the northwest portion of the District's system. Expansion and upgrading of the plant has been included as a component of the District's planned water treatment improvements, Stage 2. The Engineer's Report for this project included recommendations to construct a new contact clarifier and replace the existing clarifier mechanisms between 2000 and 2002 at an estimated cost of approximately $18 million (1997 dollars). A public hearing was conducted for the Stage 2 improvements and the Engineer's Report and Mitigated Negative Declarations were approved and adopted by the Board on December 15, 1998. At that time the Board authorized staff to proceed

with design and construction of the Stage 2 Improvements which also include installation of ozone facilities and other improvements to enhance treated water quality.

Detailed design of the Stage 2 improvements is scheduled to begin in July 1999. The sequencing and timing for construction of the various State 2 improvements will be coordinated to minimize disruption and/or reduction of plant deliveries. The District will be working with its retailers to identify scheduling constraints and coordinate use of alternative supplies, as necessary.

Raw Water Delivery to the San Jose Water Company's Montevina Treatment Plant

In 1997, San Jose Water Company (SJWC) inquired about receiving an additional source of supply from the District's Lexington Reservoir in order to maximize production from SJWC's Montevina Treatment Plant (Montevina) during the fall. Montevina, located adjacent to Lexington Reservoir, receives its water supply from Lake Elsman and has a treatment capacity of 20 mgd. In many years, during the months of October through December Montevina has been forced to shut down or reduce its flow capacity because of insufficient water supplied from Lake Elsman.

According to SJWC's hydraulic analysis, with Montevina producing 20 mgd, SJWC could deliver the additional water to an expanded area on the west side of Los Gatos Creek. Because the District anticipates some difficulties in replenishing the groundwater basin to meet the future demand in this area, the delivery of additional water into this area would help the District manage this sector of the basin. In addition, the diversion of water from Lexington Reservoir would reduce the frequency of water being spilled or lost to the Bay. Another benefit for SJWC would be the system redundancy the water would provide. If for some reason the Montevina WTP were unable to use water from Lake Elsman, the plant could still be served from Lexington Reservoir.

Current District policy would prohibit the District from delivering raw water to Montevina because the District's 1974 Surface Water Delivery Policy requires surface water not be resold and be used on the property where the diversion occurs. The purpose of this policy is to: 1) conserve groundwater by providing surface water to qualified users to reduce groundwater pumping, and 2) to reserve the rights for the District to treat raw water and to maintain the ability to distribute potable water in the future. District staff has reviewed the 1974 policy and technical implications related to delivering raw water to Montevina. Based on staff analysis, approximately 2,500 af/year of water from Lexington Reservoir could be delivered to Montevina from October through December, which is more water than SJWC has historically (from 1967 to 1996) had available.

In November 1997, The Board approved an exemption to this policy to allow staff to proceed with negotiations with SJWC for surface water deliveries from Lexington Reservoir to Montevina. As part of the investigation and negotiation, the District will:

1. Analyze potential effects on current water rights.
2. Analyze potential District rate impacts.
3. Analyze any additional system flexibility and operational opportunities.

Capturing Additional Local Streamflows

The 1997 IWRP identified four potential sites (Stevens Creek, Alamitos Creek, Uvas Creek, and Guadalupe River) where local streamflows may be developed into additional water supply yield. Both internal and external stakeholders voted against installing an inflatable dam in Guadalupe River due to environmental concerns; thus, no further evaluation of this option is recommended in the near future.

Staff has completed a preliminary evaluation of the other three sites for capturing additional local streamflows and recommends further evaluation of the Uvas watershed for the following reasons:

- The average Uvas Reservoir inflow is more than 27,000 af/year, and only 30 percent or approximately 8,000 af/year has been developed into local water supply yield. The amount of local water wasted in Uvas watershed is far greater than is wasted in Stevens Creek and Alamitos Creek. Staff believe that capturing additional local streamflows in Uvas may provide a greater benefit to the District water supply.

- The areas around Uvas Creek are less developed and urbanized than the North County sites and would be less costly to purchase.

Over the next five years, District staff will investigate the feasibility of diverting local water from the Uvas watershed.

Monitor In-County and Out-of-County Surface Storage Options

The 1997 IWRP identified several options for increasing surface storage of excess imported and local water during wet years. Further investigation of these options is not recommended due to the increasing difficulty of obtaining project approval in the current regulatory environment. However, the District will continue to monitor opportunities for additional surface storage.

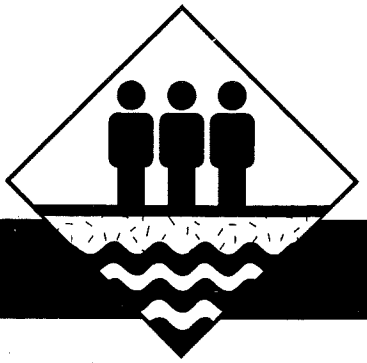
The CALFED Program may provide one potential storage opportunity. The CALFED program is planning to release a draft preferred alternative in January 2000. Additional surface storage has been included in CALFED's initial studies, although specific locations have not been identified. Any future local share of storage opportunities will have to be determined by site-specific studies.

Summary and Implementation Schedule

Table 6-2 summarizes the water supply and planning activities that support the preferred strategy and the time frames for their implementation.

Table 6-2
Summary of IWRP-Related Water Supply Planning Activities

Program / Study	Purpose	Responsible Unit / Project	Duration / Completion
Water Demand Projection Update	Update the District's water demand projections through Year 2020	Water Supply Policy and Planning Unit	1999
Water Demand Projection Update	Report on the findings of the demand projections update	Water Supply Policy and Planning Unit	1999
General Groundwater Quality Monitoring Program	Develop a database that enables the District to evaluate the status of grounwater quality, and highlight areas of concern	Water Quality Unit	Ongoing
Water Quality Liaison Program	Provide oversight of solvent and other contaminant cases to verify that appropriate and expeditious clean-up is occurring	Hydrology and Geology Unit	Ongoing
Leaking Underground Storage Tank Oversight Program	Oversee the investigation, clean-up, and closure of cases where soil and/or groundwater has been affected by petroleum fuel, and additives such as MTBE from leaking underground storage tanks	Underground Storage Tank Unit	Ongoing
Nitrate Management Program	Reduce nitrate contamination through eduction and monitoring	Water Quality Unit	Ongoing
Groundwater Assessment and Protection Program	Assess groundwater vulnerability to pollution and develop management program	Water Quality Unit	Ongoing
Groundwater Basin Management Plan	Document the County's groundwater resources management practices	Water Supply Policy and Planning Unit	1999
System Vulnerability Assessment	Analyze the vulnerability of District's facilities under various emergency or disaster scenarios	Integrated Water Resource Plan Project	2002
Expansion and Upgrade of Rinconada Water Treatment Plant	Enhance water supply in the west side of the North County	Project Development Group	2001-2003
Delivery of Raw Water to Montevina Water Treatment Plant	Maximize use of local water, and analyze potential impacts on District's water rate	Water Supply Policy and Planning Unit	2000
Capturing Additional Local Streamflow at Uvas	Enhance and maximize local water supply in District's service area	Water Supply Policy and Planning Unit	2003
Monitoring In-and-Out-of County Surface Storage Options	Monitoring Opportunities for additional surface storage of excess imported and local water during wet years	Water Supply Policy and Planning Unit / Imported Water Project	Ongoing



Chapter 7: Public Involvement and Outreach

Background

Since the IWRP was launched in March 1996, public participation has been one of its central elements. The IWRP process was shaped by the premise that a combination or array of water resource options would be needed to meet the District's water supply goals, and that any selected strategy must respond to community concerns in order to succeed. A key goal for the final, preferred strategy was that it reflect public interests and achieve maximum public acceptance.

During the planning phase, the IWRP stakeholder process delivered what the District and the community at large hoped for: a flexible plan to meet potential water supply shortfalls while reflecting community priorities. The plan also paved the way for continued stakeholder involvement in the implementation phase.

To obtain community input on potential strategies during the first, or planning phase, the District's IWRP team developed and implemented a stakeholder process. A stakeholder was defined as anyone who would be affected by or had an interest in the final plan. "Internal" stakeholders included the IWRP project team and other District staff. Team members, who represented a variety of engineering, technical, environmental, economic and communication fields, met regularly with other staff who validated methodology and provided technical guidance.

"External" stakeholders included the general public, businesses, community and environmental groups, public officials, other water agencies, landscape professionals and agricultural interests. These stakeholders helped verify IWRP planning assumptions, reviewed IWRP objectives and evaluation criteria, provided feedback on potential water resource strategies and kept the team informed of community concerns.

Three levels of stakeholder involvement were incorporated into the IWRP's first phase. Level 1, the "core" group of stakeholders, worked closely with the project team during five in-depth meetings throughout the process. Level 1 stakeholders played a significant role in developing the preferred strategy to meet future water supply demands. Despite differences in their individual viewpoints, they agreed on four primary components as the basis for the strategy: water banking, recycled water, demand management, and water transfers. As their work drew to a close, members of this core group indicated a strong desire to continue to assist the District in the implementation phase.

Level 2, which consisted of a day-long forum of community, business, environmental, civic and cultural groups, focused on issues of community acceptance and environmental impacts and built on the work done by Level 1 stakeholders. The general public represented the third level of external stakeholders. The District launched two ad campaigns (including publication in English-, Spanish- and Chinese-language newspapers) and held four community meetings at locations throughout the County to present the IWRP process and engage interested residents in water resources issues. News of IWRP developments was also provided to the public via the District's web page.

In addition to direct public outreach, the IWRP team provided periodic updates to the Board, and coordinated an informal meeting between Level 1 core group stakeholders and the Board to facilitate open discussion of IWRP-related issues.

Stakeholder Involvement in Implementation Planning Phase

The planning phase described above had the ultimate goal of Board adoption of the IWRP and included a high degree of internal and external stakeholder involvement. The implementation planning phase, which sets a timeline for carrying out the IWRP, incorporates a less vigorous, but still crucial, stakeholder role that focuses primarily on Level 1 external stakeholders.

Stakeholder meetings will be convened as needed to address specific issues and water supply updates. Because the water supply scenario is always changing, the implementation plan includes provisions for additional Level 1 stakeholder meetings to address unforeseen events or activities that could affect the IWRP Preferred Strategy. Stakeholders would be called to a meeting if there were any significant shift in thinking on the preferred strategy, or if there were a specific occurrence that had the potential to significantly alter preferred strategy assumptions or projections. In such a situation, stakeholders would be briefed, and their comments and recommendations relayed via project team updates at Board meetings.

In addition to internal and Level 1 stakeholder involvement, general (Level 3) stakeholder communication may include press releases, related media outreach, and IWRP information on the District website.

Stakeholder Involvement: 1997-99

Level 1 core group members met with the project team in October 1997 to receive an update on water supply developments, including a District water banking agreement with Semitropic Water Storage District, status reports on District water conservation and water recycling programs and District participation in the state/federal CALFED Bay-Delta program. Core group members reviewed the implementation phase workplan, discussed policy issues and were encouraged to communicate relevant information with their individual communities of interest.

The Level 1 group met again in October 1998 for a yearly preferred strategy update, including developments in water banking and transfers, water recycling and conservation. The stakeholders were also briefed on trigger issues, including CALFED draft preferred alternative developments, MTBE and other water quality topics and two collaborative efforts involving the District, the Guadalupe River Flood Control Project Collaborative and the Fisheries and Aquatic Habitat Collaborative Effort (FAHCE).

In February 1999, Level 1 stakeholders attended a joint meeting with the District's Water Commission, an advisory group of local elected officials. The two groups heard a presentation on CALFED's draft preferred alternative, which was released in December 1998 and is now being reviewed through an environmental impact report/environmental impact study (EIR/EIS) process. The revised draft programmatic EIR/EIS will be released in 1999 and is expected to be finalized by June 2000.

Public Awareness Research

As an additional tool in ensuring that IWRP objectives meet community concerns, project team staff will utilize public awareness research data on water supply and water quality issues. Consisting of baseline and follow-up public surveys and focus groups, this research will be conducted on an ongoing basis by the District work groups responsible for water supply and quality, with assistance from the District's public information office.

Outreach on Key Components

The District maintains a strong, ongoing outreach program on water quality and water supply issues. The following is a description of those outreach activities that relate most directly to the preferred strategy's four key components. These components and outreach activities are also described in District publications, including the annual performance report.

- **Water Banking (see Chapter 2).** In 1996, the District entered into a onetime agreement with the Semitropic Water Storage District to "bank," or store, up to 45,000 af of SWP entitlement in Semitropic's groundwater basin through the year 2035. A 1997 agreement with Semitropic incorporated the earlier agreement and added more flexibility, allowing the District a 10-year option to bank up to 350,000 af. Outreach on water banking has primarily consisted of presentations to local agencies, stakeholders and the District's water retailers. The Semitropic agreement is also described in District publications.

- **Recycled Water (see Chapter 3).** The Board adopted a new water recycling policy in July 1997 that broadens District support for water recycling projects throughout the County. The District offers this support through reimbursements to recycled water users (increased from $93 to $115 per af in 1997) and through participation and partnerships in several major recycled water projects. These include a partnership with the South County Regional Wastewater Authority in 1998 and District participation in the Milpitas and Transmission Pipeline projects, which helped the South Bay Recycling Project deliver recycled water to Milpitas in May 1997.

  In addition, District staff are currently working with City of San Jose staff to develop partnerships that would coordinate the IWRP with the City's long-term wastewater master plan. District outreach on recycled water has consisted of cosponsorship of the South Bay Recycling Project's Milpitas Kickoff event in May 1997, membership and participation in the WateReuse Association and other recycled water groups, development of outreach materials on water recycling and presentation of recycled water information at several community events and to the District's Agricultural Advisory Committee. In 1998, District staff and members of the Board began participating in the City of San Jose's long-term strategic planning process for recycled water.

- **Water Conservation (see Chapter 4).** The District's conservation program reflects many successful strategies developed in the 1987-1992 drought, as well as new projects. The District funds and administers a popular ultra-low-flush toilet (ULFT) rebate program, in which residents and businesses receive $75 rebates from their water supply companies to replace old, inefficient toilets with new, 1.6-gallon models. Since the program's inception in 1992, more than 130,000 water-saving toilets have been installed throughout Santa Clara County, saving approximately 4,000 af/year. In 1995, the District expanded the ULFT rebate program for commercial/industrial customers.

  In 1997, the District entered into a $3.2-million cost-sharing agreement with the city of San Jose to conduct targeted ULFT rebate programs and expand Countywide the city's Financial Incentives Program for businesses and industries that make water-efficient process changes. The cost-sharing agreement was extended in 1998. Also in 1998, the District joined forces with the city of San Jose and local business leaders on the "Slow the Flow, Save the Bay" campaign, which encouraged Silicon Valley employees to purchase ULFTs and reduce treated wastewater flows to the South Bay. In addition, a limited-time offer of ULFT rebates of up to $100, from August to October 1998, proved extremely popular, boosting participation in the District's ULFT program nearly threefold.

  In 1999, a second, limited-time offer on ULFT rebates of up to $100 will be held from August 15 through October 31. Water savings from this effort are projected to meet our BMP goal for this program by late fall 1999.

  In July 1999, the District launched a new program: home water use surveys for single- and multifamily homes. The program provides free, on-site water "audits" by trained surveyors of both indoor and outdoor water use, with a goal of assisting residents in lowering their overall water consumption.

  The limited-time offer, home water use survey program, a joint washing machine rebate with PG&E, and general water conservation tips were all promoted in summer 1999 through a multimedia public information campaign. The campaign's central character is Mrs. Noah, depicted humorously as a 1950s-era, no-nonsense grandmother, whose slogan is "Mrs. Noah Knows Best." The campaign builds upon the District's successful "Noah Knows" winter flood awareness campaign with a goal of year-round public outreach on District issues.

Other ongoing water conservation outreach includes: training in low-flow irrigation installation and maintenance for landscaping professionals (in English and in Spanish); water-wise landscaping workshops for home gardeners; irrigation audits for large-turf users; and direct outreach at community events and in local schools via the District's public information office and schools program.

- **Water Transfers (see Chapter 5).** At this time, preferred strategy implementation is limited to the intermediate action level, which does not include water transfers until after 2005. However, the IWRP also includes the provision that transfer opportunities be investigated as they become available. To this end, in February 1998 the Board approved guidelines for the implementation of potential long-term water transfers. Outreach on long-term water transfers has consisted of presentations made in public Board meetings.

Outreach on IWRP-Related Programs

Several District endeavors, while not part of the IWRP process, nonetheless are strongly linked to IWRP planning objectives and core elements. They include:

- **Imported Water Project.** The purpose of this project is to increase public awareness of the County's reliance on imported supplies, which account for nearly half of the area's total water supply. The District works to protect and expand imported water sources under this project, which includes many important efforts, such as CALFED, below. The District highlights imported water issues and activities in many of its publications and participates in outreach efforts with other agencies.

- **CALFED Bay-Delta Program.** This unique, state-federal partnership involves local communities as stakeholders in crafting a plan to restore the Bay-Delta, which has suffered from worsening ecosystem, water supply and water quality problems for decades. About half of Santa Clara County's water supplies come from Bay-Delta watersheds; therefore, the District has a keen interest in this program. The District itself is a stakeholder in the CALFED process, which released a draft preferred alternative in December 1998 and an Environmental Impact Report/Environmental Impact Statement in June 1999. District staff have conducted regional and local outreach efforts with news media, business, community groups and elected officials in support of the CALFED process. A solution to Bay-Delta water quality and supply problems through CALFED is identified as a "trigger" that could affect the performance of the IWRP Preferred Strategy.

- **The Santa Clara Basin Regional Watershed Management Initiative (WMI).** In this innovative regional endeavor, the District is playing a key part in addressing sources of pollution that threaten the South San Francisco Bay, and protecting water quality throughout watersheds in the Santa Clara Basin. Working in partnership with other agencies and community groups, District staff are developing communication tools and raising community awareness of watershed, water quality and supply issues. WMI participants expect to complete a scientific assessment of the Santa Clara Basin by 2000, which will be the foundation for a future Santa Clara Basin Regional Watershed Management Plan.

- **Treated Water Improvement Project.** Under this project, the District is making a range of significant improvements to its three Water Treatment Plants, including seismic upgrades, capacity upgrades and process improvements. This will allow the District to meet new and anticipated federal drinking water quality regulations and provide the safest and highest-quality water to Santa Clara County residents. Outreach on this project has included newsletters, treatment plant open houses and media releases.

Implementation Barriers, Uncertainties, and Risks

In any stakeholder process there is some risk due to the inherent lack of predictability of human nature: an agency has little control over stakeholders' particular viewpoints and how they may affect a project's development. In addition, there is always a risk that stakeholders will lose interest in a project or not have the time to continue participating in an ongoing process.

Because of these risks, it is imperative that stakeholder outreach be a well-planned and integral element of the overall project plan. Goals should include maintaining good communication with stakeholders while respecting their other time commitments. To this end, stakeholder meetings should be facilitated to allow an airing of stakeholder views, stakeholder outreach should be brief and clear, and updates should be consistently offered on important issues affecting the IWRP.

With regard to communication on specific IWRP components, many risks also exist, including:

- **Loss of funding, loss of communication opportunities.** Outreach can be expensive. If funding for outreach activities is cut due to budget constraints, there is a significant risk that important messages may not reach intended audiences. Such a risk is especially important

to consider (1) where behavioral changes or changes in opinion may be desired, such as with water conservation or indirect potable water recycling; and (2) where the issue may result in a potential ballot measure. *Risk management strategy*: Make funding for outreach a top priority of project planning, and provide for it.

- **Uncertainty of changing public opinion.** Public opinion may change; even with the best-designed public outreach campaigns, there is never a guarantee that people will support a given issue. This is a significant risk for indirect potable water recycling, as has been recently demonstrated in several California cities. *Risk management strategy*: Outreach on recycled water issues must be strategically planned and carried out both in the short and long term as part of any overall recycling project plan. An important element of this outreach should be public opinion research with consistent tracking to capture any opinion shifts on critical issues.

- **Uncertainty of altering behavior.** During the 1987-92 drought, Santa Clara County residents demonstrated a general willingness to save water. Indeed, many people continue to use water efficiently. However, if a severe dry period were to occur in the future, it is unclear whether there may be a hardening of demand, with people unwilling or unable to conserve beyond a certain point. *Risk management strategy*: Consistent outreach on efficient water use should be a year-round goal.

- **Uncertainty of outreach effectiveness.** Even well-designed outreach campaigns sometimes lack effectiveness, which is a communication strategy risk. *Risk management strategy*: Major outreach campaigns should begin with focus group surveys and end with post-campaign surveys to measure effectiveness and provide goals for further improvement. In addition, such campaigns should feature built-in success indicators, and should be planned with the flexibility to address unforeseen developments.

Summary and Implementation Schedule

Table 7-1 summarizes the District's public involvement and outreach activities and associated implementation time frames.

Table 7-1
Summary of IWRP-Related District Outreach Activities

Activity	Purpose	Responsible Unit / Project	Duration; Content
IWRP	Maintain stakeholder involvement in IWRP implementation	IWRP Project Team	Ongoing; stakeholder annual report each fall; additional meetings as needed; website and media outreach as needed.
Public Awareness Research	Maintain public awareness / opinion of District programs	All Groups, with assistance from Public Information Office	Ongoing
Water Conservation	Promote water conservation through a variety of targeted and general programs	Water Conservation Unit; Public Information Office	Ongoing programs for indoor, outdoor, home, commercial and agriculture; numerous events and publications; partnerships with waste-water treatment plants and retailers; website; media outreach as needed
Recycled Water Project	Support and promote recycled water projects and use	Recycled Water Project	Ongoing; partnership with San Jose; website; media outreach as needed
Imported Water Project	Increase public awareness of County's reliance on imported water	Imported Water Project	Ongoing; community and business meetings, *Heads Up* newsletters, website and media outreach
Santa Clara Basin Watershed Management Initiative (WMI)	Increase public awareness of watershed protection activities	WMI Project Team, with other WMI Stakeholders	Ongoing; newsletter under development will report on watershed protection activities
Water Quality Regulatory Compliance Project (WQRCP)	Inform communities near treatment plants of upgrade activities	WQRCP Team	Ongoing; *Pipeline* newsletter; neighborhood meetings
Fisheries and Aquatic Habitat Collaborative Effort (FAHCE)	Increase public awareness of District's fisheries habitat protection activities	FAHCE Project Team, with other FAHCE Members	Ongoing; fact sheet, website, annual reports; media outreach as needed
Guadalupe River Collaborative Project	Increase public awareness of District's fisheries habitat protection activities as part of the Guadalupe River Flood Project	Collaborative Project Team with other Collaborative members	Media outreach as needed



Chapter 8: Policy Issues

This chapter addresses policy issues raised by stakeholders during the development of the IWRP Preferred Strategy. Consideration of these issues was deferred to the project's implementation phase to facilitate timely completion of the preferred strategy.

The District's Role in Land-Use Planning

The role the District plays in land-use planning is typical of other California water agencies. Historically, the District has exercised no direct influence on the degree of development or the type of development that occurs within its service territory. These decisions have long been viewed as the domain of the County and City planning agencies.

The District has, however, worked with these agencies to ensure the availability of sufficient water to meet the anticipated development identified in the County and municipal general plans. In addition, the District has asked local land-use planners to review assumptions used in water demand forecasting to ensure that they are consistent with general plan assumptions.

During Phase I of the IWRP process, stakeholders in both the Level 1 core group and the Level 2 forum expressed the need for better coordination between land-use agencies and water suppliers. Level 2 stakeholders in particular suggested the District take an active role in limiting growth as a means of balancing future water supplies with future water demands. This sentiment is not unique to Santa Clara County, and has been the subject of discussion throughout the state over the past ten years.

In 1995, Governor Wilson signed into law SB 901, which requires cities to coordinate the development of their general plans with local water agency Urban Water Management Plans. In addition, SB 901 requires land use agencies to request an assessment of the availability of water to meet the needs of any new development that satisfies one or more of the following criteria:

- Residential developments of more than 500 units.
- Retail development employing more than 1,000 persons or larger than 500,000 square feet.
- Commercial development employing more than 1,000 persons or larger than 250,000 square feet.
- Hotels or motels of more than 500 rooms.
- Industrial, manufacturing, or processing facilities planned to house more than 1,000 persons, occupy more than 40 acres, or larger than 650,000 square feet.

In 1997, District staff met with representatives from a number of local planning agencies to discuss these requirements. In general, local planning agencies were unaware of these requirements and were interested in strengthening the connection to water supply planners.

The District is taking an increasingly proactive role in establishing lines of communication with the County and each of the local municipal planning departments. Such a role might include development of an informational workshop explaining current legislative requirements, and an overview of the District's water supply planning process, including the District's IWRP and Urban Water Management Plans.

The Santa Clara County Association of Planning Officials (SCCAPO) has been receptive to the idea of annual presentations by the District as part of its regular educational program. This or other opportunities to interact with local land-use planners should be acted on to solidify the interagency communications necessary to integrate water supply and land-use decisions.

The issue of land-use planning is also under discussion in several other forums including the Fisheries and Aquatic Habitat Collaborative Effort (FAHCE) and the Watershed Management Initiative (WMI). The focus of these discussions is on the impact land-use planning has on environmental resources and water quality.

The District's Community Projects Review Unit in the Water Resource Management Group is most closely linked to the agencies discussed above. It is recommended that this unit be charged with developing a plan for addressing the requirements of SB 901.

Enhancing the Environment

Participants in the IWRP Level 2 Stakeholders Forum raised the issue of environmental enhancement. Stakeholders suggested the District consider policies and actions that go beyond simply mitigating the environmental impacts of its operations. The Level 2 stakeholders felt that where practical, enhancements to the environment add value to adjacent communities. Stakeholders identified the District as the local agency best suited to enhance aquatic and riparian habitats. No specific actions were identified, but increasing in-stream flows to improve habitat quality was generally discussed.

The San Jose/Santa Clara Water Pollution Control Plant's South Bay Action Plan calls for the development of pilot stream-flow augmentation projects on the Guadalupe River and Coyote Creek beginning in 2000. The District is working to integrate the pilot projects through the Fisheries and Aquatic Habitat Collaborative Effort.

District Board policies regarding environmental enhancement have evolved since the IWRP stakeholder process was completed in December of 1996. The District now seeks to serve as a steward of environmental resources, and has embraced stream management as one of its objectives. Currently, two separate collaborative negotiations are under way which may help to further define the District's policies regarding the use of water for environmental benefits.

In the Guadalupe Collaborative Effort, the District joined together with key local, state, and federal agencies and environmental groups to negotiate a solution to environmental impact and mitigation issues on the Guadalupe River Flood Control Project's downtown reach. The geographic area of discussion includes all of the Guadalupe River system and includes both flow and non-flow factors. The negotiations concluded in 1998, and implementation plans are under development. Under the terms of the negotiation, the District may contribute flows to the Guadalupe River under certain circumstances to maintain temperature requirements identified in the settlement agreement.

In FAHCE, the District joined with state and federal resource agencies and environmental groups to develop a plan for balancing fisheries and other interests on the Guadalupe River and Coyote and Stevens Creeks. The plan is expected to also address flow and non-flow alternatives that improve conditions currently acting to limit the diversity, abundance, or condition of public trust fisheries within the three streams.

In summer 1998, the District performed an experimental flows study on the Guadalupe River to determine the relationship between flows and temperature. The results of the study suggest that increasing reservoir releases does not decrease downstream water temperatures. The collaborative effort is planned to last three years, concluding in October of 2000.

District Water Pricing Policies

During the IWRP Level 1 Stakeholder process the representatives of the three POTWs expressed concern that current District pricing policies discourage a broader market for non-potable recycling, particularly in the agricultural sector.

The District is supportive of non-potable recycling as demonstrated by the inclusion of 14,400 af/year of recycling as a core element and an additional increment as part of the preferred strategy, as well as the $115 per af incentive it offers. The District is working aggressively with local and regional wastewater treatment agencies to ensure the successful development of this resource.

The issue of pricing policies and appropriate forms of support was investigated as part of a larger report entitled *Evaluation of Water Recycling in Santa Clara County*, prepared by Foster Associates Inc. for the Water Recycling Project. The report addressed a number of issues impacting the market for non-potable recycling. More work will be in the future in conjunction with the Water Utility Business Plan and the upcoming audit of the Water Utility.

Equity Among Water Users

During the last drought, water demands were reduced as much as 28 percent per year. It is generally believed that the majority of these reductions were the result of changes in outdoor water use by the residential sector. Because of the investments made in interior water use efficiency since 1992, future water rationing strategies may look again to outdoor water use.

During the Level 1 Stakeholder process, concerns were raised about ensuring equitable treatment for parties actively implementing water conservation measures identified in the core elements and in the water conservation element of the preferred strategy.

The basic concern expressed was that individuals or communities who installed water-efficient fixtures, appliances, landscapes, etc. would "harden" their demands for water to the point of being unable to achieve the same levels of rationing as less-efficient neighbors during periods of drought. Stakeholders felt efficiency improvements should somehow be accounted for in determining the levels of rationing which would need to be applied during periods of drought.

The historical methods for developing rationing targets employed by the District and its retailers have not recognized varying levels of efficiency among water users. Past rationing methods have included tiered rate structures and allocation systems based on historical usage. Neither approach directly acknowledges individual users who have already invested heavily in water use efficiency measures.

Past rationing efforts have been further complicated by the diversity of decision-making environments among retail water suppliers. The County's

retailers can be generally broken into two groups: 1) municipal water utilities and 2) privately owned water companies. Municipal water utilities are governed by their respective city councils. Privately owned water companies (San Jose Water Co., Great Oaks Water Company, California Water Service Co.) are regulated by the California Public Utility Commission (CPUC).

Historically, local city councils have been careful to develop rationing strategies which were responsive to their constituents and which addressed concerns unique to their particular communities. By contrast, private water companies have been limited in the options available to them, as determined by the CPUC. These issues will need to be addressed as part of the development of a Countywide strategy to ensure equity among water users.

A discussion of these issues began in 1993, at the conclusion of the 1987-1992 drought, within the District's Water Retailer Sub-Committee. This group is an advisory committee comprised of representatives of each of the District's thirteen retail water suppliers. The group has historically worked closely with District staff to develop and implement Countywide responses to water supply shortages. The group acknowledged the need to develop better rationing and drought response strategies, but did not take the issue any further.

Under the current District organizational structure, the Water Conservation Unit of the Water Resource Management Group is best positioned to address this issue in cooperation with the water retailers. The Water Conservation Unit works closely with all retail water suppliers in implementing water conservation programs. It is recommended that the Water Conservation Unit work with the Water Conservation Working Group of the Water Retail Subcommittee to develop a scope of study and schedule for identifying alternative rationing programs that will provide increased equity among water users.

The scope and schedule for this work could be developed as a separate effort or as a sub-element of the water conservation Master Plan discussed in Chapter 4 of this report and scheduled to begin in FY 1999-2000.

Chapter 9: Conclusions and Recommendations

This chapter summarizes the implementation of the key components of the IWRP Preferred Strategy and lists recommended strategies to ensure their continued success. This chapter also summarizes other IWRP activities, such as water supply and water quality activities, public outreach and involvement, and policy issues. Finally, this chapter details emerging issues and programs related to the IWRP process, such as the Water Utility Business Plan, and describes the schedule for future IWRP reports.

Implementation Summary for Key Components of the Preferred Strategy

Water Banking

The preferred strategy of the IWRP identified water banking as one of its key components to be pursued immediately. It indicated the immediate need for up to 100,000 af in storage capacity, with another 250,000 af of storage in the future, for a total of 350,000 af.

In 1997, the District entered into a long-term water banking agreement with Semitropic Water Storage District. The agreement allows the District to store up to 350,000 af in the banking program. The District now has over 93,000 af stored in the program.

To ensure the continued success of the water banking program, the District should pursue the following strategies:

- Continue to investigate and work with other agencies regarding other potential water banking programs. Such programs could provide additional benefits to the District such as increased operational flexibility or reliability, and may be less costly.

- Investigate combining water banking programs with long-term water transfers to provide an even greater level of reliability than either component can provide separately.

- Continue monitoring the Semitropic program, both cost of the program and quantity of water stored, and continue monitoring of any future banking programs.

Recycled Water

When the IWRP was developed, 14,400 af of recycled water per year for the District was included as a core element. The preferred strategy calls for an additional 6,000 to 31,000 af/year for an annual total of up to 25,000 af of recycled water.

Several non-potable water recycling projects are currently under development in the County by local agencies and/or the District. These projects include the South Bay Water Recycling Program (Cities of San Jose, Santa Clara and Milpitas), the Sunnyvale Water Recycling Program, the South County Regional Wastewater Authority (Cities of Gilroy and Morgan Hill), and the Palo Alto Recycling Project (Cities of Palo Alto and Mountain View).

To ensure the continued success of the recycled water program, the District should pursue the following strategies:

- Continue District support for the program and for expanding the partnerships with local POTWs.
- Evaluate the water rate structure as a policy tool to create incentives for use of recycled water.
- Study the feasibility of adding indirect potable reuse to the District's plan, with regional cooperation, if possible.
- Continue using conservatively low projections of Countywide use of recycle water.
- Continue annual evaluation of the production and use of recycled water.
- Cooperate with other agencies on a statewide basis.

Water Conservation

A key component of the IWRP Preferred Strategy is an aggressive water conservation program. With a core element of achieving 46,000 af/year water conservation and an additional 11,000 af/year included in the preferred strategy, by year 2020 the District expects to save more than 57,000 af/year from its water conservation programs.

To ensure the continued success of the water conservation program, the District should pursue the following strategies:

- Conduct a Water Conservation Baseline Study to determine how and why a conservation program works and which customer groups are conserving. The District should make water retailers aware of the study and ask them to commit to participation.

- Using the results of the Water Conservation Baseline Study, the next step is for the District to prepare a Water Conservation Master Plan. This will provide the framework within which the future conservation program will operate.

- Enhance the existing monitoring program to more rigorously quantify actual water savings. An improved and formalized Monitoring and Evaluation Program would ensure that future savings goals are achieved and demand management programs are successful.

- Perform a detailed survey of the billing and record-keeping systems of the water retailers to determine which retailers supply information on customer categories (i.e. Single-Family Residential, Multi-Family Residential, Commercial, Institutional, Industrial and Large Landscape).

- Develop an evaluation strategy to measure the success of each existing and planned conservation measure. A database to track water conservation activities and calculate water savings should also be developed.

Water Transfers

The preferred strategy of the IWRP calls for up to 50,000 af of long-term water transfers. If demands are anticipated to reach the upper end of the demand range, the District could consider additional long-term transfers of up to 25,000 af/year. Water recycling—if cost and operational issues are solved—could also substitute for this amount. The preferred strategy recommends that an agreement for up to 25,000 af be in place by 2005-2010 and opportunities for transfers that occur earlier than 2005 should be considered as they arise.

One of the opportunities that have arisen is the availability of SWP entitlement from agriculture contractors, under the terms of the Monterey Agreement. Recently, the Pajaro Valley Water Management Agency contacted the District and the Westlands Water District about the possibility of an agreement for the temporary use of water available through a pending assignment of CVP water from Mercy Springs Water District to Pajaro Valley.

To ensure the continued success of the water transfer program, the District should pursue the following strategies:

- Address the effects of individual and cumulative transfers on a groundwater basin. Collection and analysis of groundwater monitoring information, before a proposed transfer, can establish a "baseline," and subsequent groundwater monitoring during and after a transfer may help in determining any transfer impacts.

- Address concerns about the impacts to the local economy, individuals, downstream users or the environment through avoidance and mitigation of third-party impacts, as well as the implementation of a water transfer tax or fees.

- Address concerns about water rights assurances. New legislation or specific transfer contract provisions may be able to address this issue, by assuring the transferor that water transferred for a defined period of time would be recoverable in the future.

- Address the lack of a uniform regulatory process governing transfers. This issue may be addressed through further legislation and the development of water transfer guidelines.

- Continued monitoring any water transfer agreements entered into by the District. Activities and efforts taking place on a state-wide level will also be tracked.

Summary of Other IWRP Activities

Water Supply and Water Quality Activities

Water supply and water quality activities that will be performed over the next five years to support the implementation of the IWRP Preferred Strategy include the following:

- **Water Demand Projections Update.** During 1999, the District will update its water demand projections – which are key in water supply planning – by Water Service Area through the year 2020. A demand range will be computed, including upper, lower and most likely demand projections.

- **Comprehensive Reservoir Watershed Management Plan.** A number of programs have been implemented or are being revised and upgraded to monitor the quality of the surface waters and groundwater that contribute to the County's water supply.

- **Groundwater Basin Management Plan.** The Groundwater Basin Management Plan is documenting the management of the County's groundwater resource. The ultimate goal of this project is to improve groundwater modeling and enhance groundwater management practices throughout the District.

- **System Vulnerability Assessment.** A comprehensive assessment of the District's system and program vulnerability is necessary to determine overall water supply reliability and to develop contingency and mitigation strategies. Over the next five years, this assessment program will begin to collect and review existing studies, recommend any program mitigations or elements, recommend and sponsor any additional or supplemental studies, and periodically review vulnerable areas.

- **Reoperation of Facilities.** The District is evaluating several operational modifications discussed during the IWRP, including greater utilization of Hetch-Hetchy supplies, building a new South County Water Treatment Plant or additional recharge, prioritizing imported water over local water, storing imported water locally, and expanding the Rinconada Water Treatment Plant. Another issue, the possibility of delivering raw water to the San Jose Water Company's Montevina Treatment Plant, is also being looked at.

- **Capturing Additional Local Streamflows.** The IWRP identified four potential sites (Stevens Creek, Alamitos Creek, Uvas Creek, and Guadalupe River) where local streamflows may be developed into additional water supply yield. Of these four possibilities, only the Uvas Creek option is receiving further evaluation over the next five years.

- **Monitor In-County and Out-of-County Surface Storage Options.** The IWRP identified several options for increasing surface storage of excess imported and local water during wet years. Because of increasing difficulty in obtaining project approval, staff recommended not investigating these options at this time, but continues to monitor for future opportunities.

Public Involvement and Outreach

Since the beginning of the IWRP process, public participation has played a key role. The planning phase, with the ultimate goal of Board adoption of the IWRP, included a high degree of internal and external stakeholder involvement. The implementation planning phase incorporates a less vigorous, but still crucial, stakeholder role.

To ensure the continued success of the Public Involvement and Outreach program, the District should pursue the following strategies:

- Each fall, invite Level 1 stakeholders to attend a meeting on the Annual IWRP Report, where they will review the report before it is presented to the Board. In addition, convene meetings as needed to address specific issues and provide stakeholders with water supply updates.

- Contact general (Level 3) stakeholders with press releases and related media outreach, and a yearly newsletter sent to interested recipients on IWRP developments.

- Develop a long-term public outreach and participation plan to address both internal and external stakeholder involvement.

Policy Issues

During the planning phase of the IWRP process, stakeholders raised issues that were deferred to the project's implementation phase. These issues are being addressed as follows:

- **The District's Role in Land-Use Planning.** Stakeholders felt the District should become more proactive in working with local land-use planning agencies to convey the impacts of growth on local and statewide water resources. The District is taking an increasingly proactive role in establishing lines of communication with the County and each of the local municipal departments.

- **Enhancing the Environment.** The District's policies regarding environmental enhancement have evolved since the IWRP stakeholder process in 1996. The District now seeks to serve as stewards of environmental resources, and has embraced stream management as one of its objectives. Currently, two separate collaborative negotiations are under way which may help to further define the District's policies regarding the use of water for environmental benefits.

- **District Water Pricing Policies.** During the Level 1 Stakeholder process concern was expressed over the current District pricing policies. Specifically, concern that the District discourages a broader market for non-potable water recycling, particularly in the agricultural sector. This issue was investigated as part of a larger report entitled "Evaluation of Water Recycling in Santa Clara County," prepared by Foster Associates, Inc. for the Water Recycling Project. More work will be done in the future in conjunction with the Water Utility Business Plan and the upcoming audit of the Water Utility.

- **Equity Among Water Users.** Some Level 1 stakeholders expressed a concern that parties who have aggressively pursued efficiency improvements would be asked to further reduce during periods of shortage. Stakeholders felt efficiency improvements should be accounted for in determining the level of rationing applied during periods of drought. It is recommended that the Water Conservation Unit work with the Water Conservation Working Group of the Water Retail Sub-Committee to develop a scope of study and schedule for identifying alternative rationing programs that will provide increased equity among water users.

Emerging Programs and Issues Related to the IWRP

The following is a summary of items related to the IWRP, many of which have surfaced since the publication of the 1997 IWRP Final Report.

Water Utility Business Plan

A business plan for the water supply functions of the District was published in April 1999. This plan describes the five key strategies—a Marketing Strategy, a Water Management Strategy, a Water Quality Strategy, a Water Funding Strategy, and a Performance and Accountability Strategy—which the Water Utility will implement over the next five years.

The Water Management Strategy is designed to help clarify and further define the policy aspect of water supply reliability and to identify the coordinated actions necessary to achieve that policy. This strategy is intended to help effectively manage the District's multiple water supplies and overall water supply infrastructure in order to meet customer-desired reliability at the least possible cost. The strategy will aim to improve coordination of imported and local water supplies, explore opportunities for improved system operation and conjunctive use of surface and groundwater, develop policy options and guidelines for banking, wheeling, and transfers, and address the multiple demands placed on the available water supply. A distinct aspect of the strategy will address infrastructure reliability and emergency planning, preparedness and response. Finally, because certain aspects of water supply reliability are directly related to the needs of market segments and the desire for differentiated products or prices, the Water Management Strategy will be closely coordinated with the Marketing Strategy.

CALFED

Today the San Francisco Bay/Sacramento-San Joaquin River Delta system (Bay-Delta) is in serious trouble. Habitats are declining, and some native species are listed as endangered. The system has suffered from impaired water quality, and water supply reliability has declined significantly. Many levees are structurally weak and present a high risk of failure. Ultimately, California's trillion-dollar economy, the seventh largest in the world, is at risk if Bay-Delta environmental and water management problems are not resolved.

The CALFED Bay-Delta Program is a cooperative effort among state and federal agencies and California's environmental, urban and agricultural communities. It was initiated in 1995 by Governor Pete Wilson and the Clinton administration to address environmental and water management problems associated with the Bay-Delta system. The District, along with many other water agencies, business, community and environmental groups, is actively involved in this state/federal effort to develop a comprehensive solution to the problems. CALFED is scheduled to release a draft preferred alternative in January 2000.

Methyl Tertiary-Butyl Ether (MTBE)

In 1997, a chemical called methyl tertiary-butyl ether, or MTBE, became an issue for the Water District. This chemical compound was originally added to gasoline supplies in order to reduce air pollution levels, but was soon discovered to have an adverse effect on water supplies. In Santa Clara County, MTBE has been detected in our drinking water supply reservoirs, imported water supplies, and in two public water supply wells. In addition, MTBE has been detected in groundwater at more than 300 leaking underground storage tanks sites, at concentrations as high as several million parts per billion. The Board passed a resolution urging a prohibition on the use of MTBE and other ether-oxygenates in motor vehicle fuel in February 1998. A key component of the District's efforts is a long-term, $1.7 million program to protect the County's groundwater basins from MTBE contamination.

The Fisheries and Aquatic Habitat Collaborative (FAHCE)

The Fisheries and Aquatic Habitat Collaborative (FAHCE) is a multi-agency endeavor convened by the District and the California Department of Fish and Game (CDF&G) to develop a plan to improve conditions for local fish, particularly steelhead and Chinook salmon. FAHCE is a cooperative, multiparty stakeholder process for addressing Endangered Species Act issues within the County. Participants, along with the District and the CDF&G, include the Natural Heritage Institute (on behalf of the Guadalupe-Coyote Resource Conservation District), the National

Marine Fisheries Service, the United States Fish and Wildlife Service and the City of San Jose. FAHCE provides the State Water Resources Control Board with regular progress updates.

Watershed Management Initiative (WMI)

With the Watershed Management Initiative (WMI), the District is working with other interested parties to address the special water quality threats facing the South San Francisco Bay. In addition to federal, state and local regulators, the WMI also includes representatives from business and industrial sectors; professional and trade organizations; environmental, resource conservation and agricultural groups; and local public agencies.

Future IWRP Reports

Updates to the IWRP are scheduled every three to five years. Information about the IWRP, including the executive summary, can be found on the District's web site (www.scvwd.gov).

Glossary

Alternative	An inclusive term used to describe a water resource option or strategy under consideration.
Bay-Delta	San Francisco Bay/Sacramento-San Joaquin River Delta
Baseline	Reflects current facilities, contracts, programs and policies. Not a no-action alternative because it includes projects in the planning phase.
Component	An individual water resource option, such as an efficient water-use program, water transfer, or reservoir storage that has become part of a strategy.
Core Elements	Actions that the District should take under any water supply strategy. Examples include achieving 46,000 af/year of conservation by 2020, and improving reliability of SWP, CVP and Hetch-Hetchy supplies.
Evaluation Criteria	Criteria used to test how well alternatives satisfy the planning objectives.
Hybrid Strategy	A strategy which includes a combination of components, which may complement or balance each other to meet a water supply need.
No Action	Existing facilities and contracts; no changes from current status.
Non-Potable	Not suitable for drinking.
Objective Category	A grouping of objectives with similar applications.
Option	A technology, facility, or measure for augmenting water supplies or reducing demands.
Planning Objectives	The goals against which water supply strategies must be measured.
Potable	Suitable for drinking.
Stakeholder	Any individual who will be affected by or has an interest in the County's long-term water supply.
Thematic Strategy	A strategy which emphasizes a particular component such as recycling, water transfers, or reservoir storage.
Water Marketing	The voluntary transfer, lease, or sale of water or water rights.

Abbreviations and Acronyms

ABAG	Associations of Bay Area Governments
af	acre-feet. One acre-foot equals approximately 326,000 gallons, enough to cover one acre of ground to a depth of one foot.
af/year	acre-feet per year
Board	Santa Clara Valley Water District Board of Directors
BMP	Best Management Practices
Bureau	United States Bureau of Reclamation
CALFED	California/Federal. A joint state/federal effort to find solutions to problems facing the San Francisco Bay/Sacramento-San Joaquin River Delta.
CCRWRP	Central California Regional Water Recycling Program
CDP	critical dry period
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CIMIS	California Irrigation Management Information System
County	Santa Clara County
CRWMP	Comprehensive Reservoir Watershed Management Plan
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
DHS	State of California Department of Health Services
District	Santa Clara Valley Water District
DSM	Demand-side Management

DWR	Department of Water Resources
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ESA	Endangered Species Act
EWC	Environmental Water Caucus
EWMPs	Efficient Water Management Practices
gpcd	gallons per capita per day
IWR-MAIN	Institute of Water Resources computer software program
IWRP	Integrated Water Resources Plan
LBG	Los Banos Grandes Reservoir
LTA	Long-term average
mgd	million gallons per day
M&E	Monitoring and Evaluation
M&I	Municipal and Industrial
MOU	Memorandum of Understanding
NEPA	National Environmental Protection Act
NPDES	National Pollution Discharge Elimination System
O&M	Operations and Maintenance
PARWQCP	Palo Alto Regional Water Quality Control Plant
RO	reverse osmosis
RRA	Reclamation Reform Act
SBA	South Bay Aqueduct
SBCWD	San Benito County Water District
SCRWA	South County Regional Wastewater Authority
SDWA	Safe Drinking Water Act
Semitropic	Semitropic Water Storage District
SFPUC	San Francisco Public Utilities Commission
SFWD	San Francisco Water Department

SJ/SC	San Jose/Santa Clara
SWAP	Source Water Assessment Program
SWRCB	State Water Resources Control Board
SWP	State Water Project
TDS	total dissolved solids
ULFT	ultra-low flush toilet
USBR	United States Bureau of Reclamation
WPCP	water pollution control plant
WSA	Water Service Area
WTP	water treatment plant

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